JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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THE COMMITTEE OF REVISION OF THE NATIONAL FORMULARY.

It is fitting that an expression of appreciation be given in the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION of the work which is represented by the National Formulary V. Only those who have assisted in revisions of the Standards can fully realize the task of the revisers. It requires time, study and perseverance to render efficient service on such a committee and certainly all of the members have measured up to the standard implied by *efficient service.* Perhaps no distinction should be made, and there is no thought of pointing to anyone as preferred above others, but the members know that during the years in which the revision was carried on the Chairman had to give somewhat more time than other members, and this did not grow less during the period just prior to the completion of the edition. The Committee has produced a Standard which American pharmacists may well have pride in, and which is deserving of the approval of the medical profession in general. The N. F. V will become official July 1.

That time has passed since the completion of the N. F. IV and its successor is shown by the group picture on the opposite page and the one in the March number of the JOURNAL, p. 160. It is pleasing to note that there has been no change in the membership of the Committee selected for the revision of the National Formulary in 1919, and that death has not entered the ranks.

The Committee has been assisted by able and willing co-workers of related professions and pharmacists, as participants in an undertaking which exhibits a disinterestedness of a group that is rather difficult to match. The members have faithfully and in like spirit carried on the work of their predecessors. They have served medicine in its various branches, the related professions, departments of the U. S. Government, the AMERICAN PHARMACEUTICAL ASSOCIATION in its promotions, the Colleges and Boards of Pharmacy, pharmacy and pharmacists in general, and the public benefits by their accomplishments. E. G. E.

EDITORIAL

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RESOLUTIONS FOR THE HOUSE OF DELEGATES OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

IN a communication recently sent out from the office of the AMERICAN PHARMACEUTICAL ASSOCIATION, attention was called to the opportunity afforded the associations represented in it to present resolutions for consideration by the House of Delegates.

The reply of the secretary of one of the state associations, as quoted below, is so significant as to deserve publication and comment.

> "I was very glad to read in your letter that the House of Delegates of the AMERICAN PHARMACEUTICAL ASSOCIATION will be interested in having our representative submit resolutions. This is a matter which I consider of great import for I believe it will be a means of awakening every state association to the realization of the fact that each state institution is directly interested in the work of the A. PH. A., as a whole."

The House of Delegates is composed of one delegate from each state association, one delegate from each association holding membership in the National Drug Trade Conference, one delegate from each Section of the A. PH. A., and the members of the Council of the A. PH. A. A resolution or subject presented to the House is thereby brought to the attention and consideration, through its representative, of each branch of organized pharmacy, and the opportunity thus is created for the mutual interchange of experience and opinion and suggestion on a truly national scale which will be of tremendous advantage to pharmacy and to the public if full advantage of it is taken.

A majority of the associations represented in the House of Delegates will meet before the AMERICAN PHARMACEUTICAL ASSOCIATION convenes in September, and some questions undoubtedly will come before each one of them which should, for the general good of pharmacy, be passed on as resolutions to the HOUSE, for consideration and action.

The various branches of pharmacy cannot be expected to agree fully on every question any more than can those of any other group having such important and diversified interests. Other questions are either of local importance or of interest to one branch only. But it is certainly true that a proper solution of most of the problems pharmacy now faces will be assisted and hastened by a frank and friendly and *personal* discussion of them by the representatives of organized pharmacy.

E. F. K.

THE SERVICE AND RECOGNITION OF PHARMACISTS.

EVERYONE who is acquainted with the service pharmacists have rendered and searches the records of literature and science must be impressed with the fact that they are rather seldom named as such for their work in behalf of science and humanity. Scheele is more frequently referred to as chemist than as apothecary, even though it is known that during his brief but active life he was an apothecary, turning down a chemistry professorship at Upsala for fear it might divert his attention from researches in which he was engaged.

It is true that very often pharmacists carry on work which characterizes other professions but it remains that they are pharmacists. The writer in looking through one of the more recent editions of an encyclopedia found a sketch of the son of a distinguished pharmacist but excepting the incidental statement of relationship nothing was said of the father and still the former will probably admit that up to this time his father's services were greater than his own; many others, as for example, Klaproth, Sertürner, Pelletier, Caventou, might be mentioned in a related way. Even pharmacists of the present day can be included. The purpose of the search, however, was to find encyclopedic comment on Lyman Spalding and Crawford W. Long, both of whom have rendered services that have been of inestimable benefit to humanity. The first U. S. Pharmacopœia laid the foundation for standards for foods and drugs and, indirectly, for all chemicals. Every possible effort should be made to memorialize the name of "the father of the U. S. Pharmacopœia."

On March 30, a statue of Crawford Williamson Long, physician-pharmacist, was unveiled in the Hall of Fame in the Capitol. However much his discovery meant to surgery and to the afflicted, it may be questioned whether such recognition would have been possible if it had not been for the persistent efforts of our fellow-member, Joseph Jacobs,[1] of Atlanta, one-time apprentice in the pharmacy of the discoverer of ether for anesthesia. Admittedly, the discovery was promoted by minor experimentation followed by application in a surgical operation; however, the fact that Dr. Long also owned and conducted a drug store had a part in the great discovery, in which pharmacy rightfully shares honors with medicine and has pride in that the loyalty of a pharmacist to his preceptor contributed largely to making the memorial possible.

E. G. E.

EXPERT TESTIMONY.

RECENT criminal cases, some of them almost too horrible for mention in these columns, have again evidenced that expert testimony may be brought into both sides of a case, which confuses a jury or persuades the individuals of it that there is deception, or science is not what the name implies. Such evidence is introduced not only in murder trials, but in cases where there is a difference of opinion relative to medicinal effect, manufacture, process, constitution, etc. The American Medical Association and various bar associations are studying the situation with the purpose of formulating rules that shall govern such testimony.

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[1] Volume 45, PROCEEDINGS A. PH. A., p. 315; JOUR. A. PH. A., Vol. VIII, p. 999.

It is a difficult problem, but the American Medical Association, at its meeting in Dallas, will seek some way by which the medical expert can be relieved of partisanship, so that he can submit his evidence in a thoroughly professional and impartial manner.

Without saying that the testimony submitted in court is ever false, an influence obtains, when the prosecution and defense respectively employ the experts; the result is, almost without exception, that so and so is credited with being the expert for the defense and another aids the prosecution.

There will be differences of opinion and judgment of results, but some way should be found to present testimony which will not evidence the strong partiality exhibited at times, when the contestants representing the two sides of the case are well matched in the art of examination and debate, and lives or large sums are involved. It is to be hoped that the lead of the American Medical Association will be followed by other professions.

E. G. E.

AMERICAN PHARMACEUTICAL ASSOCIATION COMMITTEE ON RESEARCH.

The AMERICAN PHARMACEUTICAL ASSOCIATION has available a sum amounting to $450.00 which will be expended after October 1, 1926, for the encouragement of research.

Investigators desiring financial aid in their work will communicate before June 1, with H. V. Arny, Chairman, A. PH. A. Research Committee, 115 West 68th St., New York, N. Y., giving their past record and outlining the particular line of work for which the grant is desired.

ABSTRACT OF A RECENT A. PH. A. HEADQUARTERS LETTER.

"A few weeks ago while chatting with an old and esteemed friend, Mr. John G. Godding of Boston, the subject of the Headquarters Building Campaign was mentioned, and I inquired of Mr. Godding in regard to the matter. At that time the thought passed through my mind that it was somewhat odd that this project had not officially come to our attention, as we have so many thousands of friends among the profession, and a few days afterwards purely accidentally, a file came to my attention indicating that a circular letter had been received from you in this office in April 1924, that the matter had been passed on automatically by some mail clerk as one of the numerous requests for donations, and automatically filed.

"Some of us here were, of course, familiar with the project but had never taken the thought directly home to ourselves, as we never have happened to see this appeal and the matter almost went by default but for the two recent incidents which happened to fall near together as described above. What we hope you will consider the important part of this letter, however, is in the following.

"We want very much to show evidence of our interest, approval, and appreciation of what you are doing in this Headquarters Building Campaign, and we are accordingly attaching to this letter our check for One Hundred Dollars ($100), made out to the AMERICAN PHARMACEUTICAL ASSOCIATION, subject to your handling. . . ." Another part of the letter dealt with a periodical contribution.

SCIENTIFIC SECTION

THE p_H AND POTENCY OF DIGITALIS INFUSIONS.*

BY MAURICE L. TAINTER, M.D.

The object of this paper is a brief summary of observations made during the past three years on the changes in p_H (hydrogen-ion concentration) of digitalis infusions and the bearing of these on their physiological activity. Determinations of the p_H of some tinctures are also included. Except for the work of Joachimoglu and Bose (1) on the tincture, which appeared during the progress of this work, no information along this line has been available. The results that were obtained are interesting because of the unsuspected and rather high acidity of digitalis preparations found without demonstrable relationship to the potency of the infusion, and because they indicate the nature of the decomposition process.

p_H.

The first observations were made on a series of 19 infusions prepared in the students' laboratory from the same lot of leaves with tap water, according to the U. S. P. IX. The median p_H, determined colorimetrically in the usual manner and using the standards of McIlvaine (2), of the fresh infusions was 6.5 (range 6.3 to 6.9). On standing the p_H increased to 6.9 at the end of the fourth day followed by a decrease to 6.2 (greater acidity) at the end of 28 days and then it remained unchanged during the following two months. Essentially the same changes on standing, but a higher degree of acidity, were observed in three other infusions made with distilled water and from two other lots of leaves.[1] The results with these are presented in Fig. 1 (curves of infusions II and III at room temperature) and in Fig. 2 (curve of unpreserved infusion). Their median p_H when fresh was 6.1 and after standing different periods, 5.8. The change toward higher acidity coincided with the appearance of moldy growths. These results suggest that the preparations made with tap water were less acid than those made with distilled water, though molds occurred in both. On the other hand, it may be that the different lots of leaves used in the infusions with distilled water possessed a higher degree of acidity. That digitalis leaves themselves possess a high degree of acidity, is indicated by the following results with tinctures.

A tincture made from leaves used in the students' infusions had a p_H of 4.3, and 10 other tinctures made from 8 different lots of leaves, including 5 commercial tinctures, gave an average p_H of 4.6 (range 4.3 to 4.8). Obviously, the tinctures possessed a degree of acidity nearly equivalent to that of $n/10{,}000$ hydrochloric acid. These results agreed fairly well with those reported by Joachimoglu and Bose (1) who found a p_H of 5.88, and leave no doubt that the true acidity of tinctures of digitalis is rather high. A lower acidity of the infusion might be expected

* From the Department of Pharmacology, Stanford University School of Medicine, San Francisco.

[1] These leaves were supplied by Upsher Smith, Inc.

from its lower (about one-sixth) content of leaves. Such was actually found, since the acidity of the infusion was about one one-hundredth, when fresh, up to one-tenth on standing, of that of the tinctures. This lower acidity might be a factor in its poor keeping qualities, so that by raising the acidity the decomposition might be delayed or prevented. The effect of acidity and certain other factors were tested in the following experiments with the infusion.

One infusion was acidified to a p_H of 3.5 by the addition of 0.01 per cent hydrochloric acid, and a second to a p_H of 3.7 by adding 0.1 per cent lactic acid. From the curves in Fig. 1 it is seen that the hydrogen-ion concentration showed only slight fluctuations during the two months' period of observation. However, decomposition occurred as rapidly as in the infusions described above, as indicated by the presence of clouding, surface growth and foul odor at the end of the fourth day. An infusion made alkaline to a p_H of 8.0 by the addition of 1 per cent sodium bicarbonate became less alkaline (p_H 7.3) on standing and also developed a profuse growth and putrid odor. Therefore, increasing or lowering the acidity does not help in preserving the infusion.

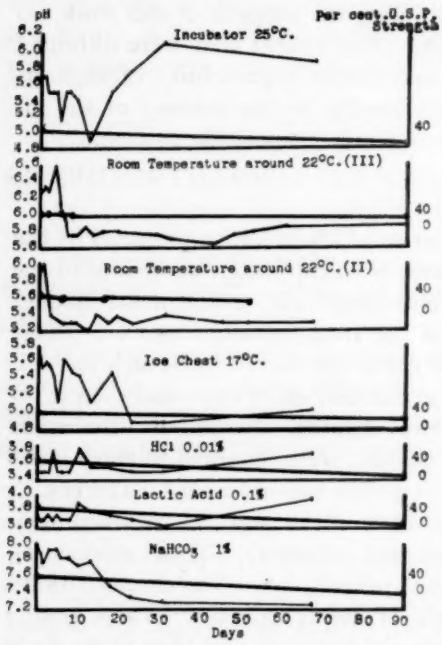


Fig. 1.—Effect of temperature and the addition of acids and bicarbonate on the changes in p_H (hydrogen-ion concentration) and potency of digitalis infusions. The light irregular lines represent p_H changes, and the heavy straight lines, potency.

All the preparations described above had been kept at room temperature which fluctuated around 22° C. Two additional infusions were observed at constant temperatures, one being kept in the incubator at 25° C., and the other in the ice chest at 17° C. The infusion in the incubator (Fig. 1) became less acid on standing, than the infusion in the ice chest although the acidity during the first 12 days was somewhat greater and occurred more rapidly. On the twelfth day it showed cloudiness and surface growth accompanied by a simultaneous increase in p_H, *i. e.*, decrease in acidity. The infusion in the ice chest increased in acidity more slowly, with fluctuations, and required about 15 days longer to reach a constant p_H than was the case with the preparations kept at room temperature. This infusion remained clear and showed no signs of bacterial growth at the end of 6 months' time. From this it appears that a low temperature such as in an ice chest does not prevent, but delays, the natural increase in acidity, and would aid in keeping the preparation pharmaceutically more elegant.

Attempts were next made to prevent the growth of organisms in infusions by sterilization with heat, and by the addition of various preservatives. Seven infusions were made from the same lot of leaves, the results of which are shown in Fig. 2. One of these infusions was sterilized in an Arnold steam sterilizer

for one-half hour on each of 3 successive days. Four were saturated with chloroform, thymol, oil of cloves and oil of cinnamon, and to one was added 10 per cent of alcohol according to the U. S. P. X. The remaining infusion was an unpreserved control prepared according to the U. S. P. IX. During the 2 months' period of observation, the heat sterilized, alcohol, chloroform and cinnamon treated preparations remained sterile as indicated by negative bacteriologic cultures and microscopic examination.[1] There was some clouding of the cinnamon infusion immediately after adding the oil, but no further change in this preparation was observed thereafter. The changes in hydrogen-ion concentration of these four infusions were quite different from those of the other three. There was a rather slow but progressive increase in acidity, which was practically the same in each, *i. e.*, from about p_H 6.1 to 5.7 at the end of 55 days. On the other hand, the remaining three preparations showed sediments, and marked growths on their surfaces, and possessed a pronounced odor on the fourth day. The presence of demonstrable growths coincided with the beginning of the marked p_H changes, *i. e.*, at about p_H 6.1. The unpreserved control showed a pronounced increase in acidity during the first seven days which lasted till the end of 20 days and then was followed by a slow change towards alkalinity, though it still remained quite acid (p_H 5.9) at the end of 57 days. The infusions preserved with thymol and oil of cloves underwent a rapid increase in p_H and became nearly neutral (p_H 6.95 and 6.9) at the end of 57 days. That is, instead of increasing in acidity as was the case with the other infusions, their acidity diminished.

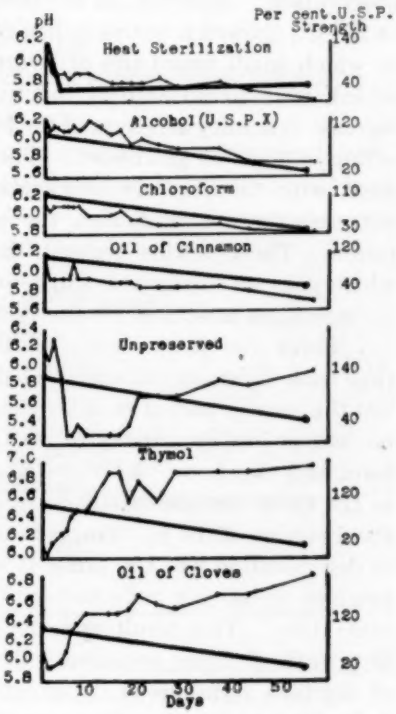


Fig. 2.—Effect of heat sterilization and preservatives on the changes in p_H (hydrogen-ion concentration) and potency of digitalis infusions. The light irregular lines represent p_H changes, and the heavy straight lines, potency.

These results give some idea of the cause of the p_H changes observed. That is, in those infusions showing no growth of organisms, the p_H changed very little, while in those with growth, there were marked changes, the direction of which was determined presumably by the type of organisms predominating. Therefore, the conclusion seems justified, that the marked changes in p_H were conditioned on the presence of contaminating organisms.

POTENCY.

In addition to observations on the p_H, bioassays of the infusions were made from time to time, using the official one-hour frog method, and standardizing the frogs

[1] I am indebted to Dr. E. C. Dickson of the Department of Public Health and Hygiene, who kindly made the bacteriologic cultures.

at each assay against the same specimen of crystalline strophanthin (Merck). The changes in potency of the various preparations are represented by the heavy lines in Figs. 1 and 2 and expressed in per cent of U. S. P. strength. It is seen that the p_H of the fresh infusions bore no relation to their activity. Thus the 2 room-temperature infusions (Fig. 1) had initial p_H values of 6.3 and 5.9, but their activity was identical, *i. e.*, about 40 per cent, while the unpreserved infusion (Fig. 2) prepared from different leaves had a p_H of 6.1, and an activity of 140 per cent. The two infusions kept at room temperature (Fig. 1) and the one in the ice chest lost only about half their activity during the ninety-day period of observation. However, an infusion that was kept warmer, that is, in the incubator at 25° C., showed a complete loss of activity during the same time. The infusions to which small quantities of hydrochloric and lactic acids and bicarbonate were added, were found entirely inactive at the end of this period. Apparently, the increase in acidity accelerated the loss of activity in accordance with the well-known action of acids on glucosides. The destructive effect of bicarbonate was in agreement with the previous observations of Watanabe (3) and others, and contraindicates the use of alkalies, for instance citrate (4), as preservatives for the infusion. These results suggest that the hydrolytic cleavage of the glucosides, which goes on slowly at room temperature and the natural p_H, is accelerated by an increase in acidity or alkalinity as well as by a moderate increase in temperature.

There was no conclusive relationship between loss of activity and contamination with living organisms. That is, the heat-sterilized preparation (Fig. 2) lost the greater part of its activity at the time of sterilization, and thereafter showed no further loss of activity, while the other three sterile infusions (alcohol, chloroform and cinnamon) deteriorated at about the same rate and to the same extent as the three contaminated preparations (unpreserved, thymol and cloves). Since the direction of the p_H changes in these infusions was widely variable, while the rate of deterioration was the same, it is indicated that the loss of potency was not dependent upon, nor reflected in, the spontaneous changes in hydrogen-ion concentration. This result and the fact that deterioration occurred independently of growth of living organisms, definitely relegate the progressive loss of activity of digitalis infusions to hydrolytic cleavage of the glucosides. This deduction is fortified by another fact, namely by the greater stability of alcoholic preparations, for instance, the tincture.

CONCLUSIONS.

1. Infusions of digitalis tend to undergo a spontaneous increase in acidity on standing, whether made with distilled or tap water, or by the methods of the U. S. P. IX or X, and also independently of temperature changes and preservatives.

2. The presence of growing organisms may modify the direction or extent of the p_H changes.

3. The loss of potency, as indicated by the official one-hour-frog method, is not prevented or altered by the addition of such preservatives as alcohol 10 per cent (U. S. P. X), and chloroform, thymol, oil of cloves or oil of cinnamon to saturation.

4. Deterioration is as rapid in sterile as in contaminated infusions, and seems to be due to the hydrolytic cleavage of the glucosides.

5. The physiologic activity of fresh, standing and decomposed infusions is independent of their p_H.

6. The true acidity of tinctures of digitalis is rather high, being nearly equivalent to that of a $n/10{,}000$ hydrochloric acid.

REFERENCES.

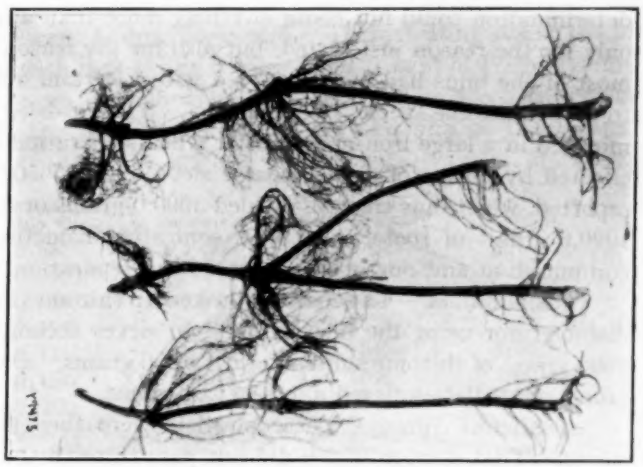
(1) Joachimoglu and Bose, *Arch. Pharm. exp. Path.*, 102, 17 (1924).
(2) McIlvaine, *Jour. Biol. Chem.*, 49, 183 (1921).
(3) Watanabe, *Tohoku, J. Exp. Med.*, 4, 98 (1923).
(4) Plaut Research Laboratory; Lehn and Fink, *Am. Jour. Pharm.*, 97, 456 (1925).

PHYTOCHEMICAL NOTES.*[1]

95. A CHEMICAL STUDY OF THE RHIZOME AND ROOTS OF PODOPHYLLUM PELTATUM L.

BY H. L. KUESTER.

Collection and Drying.—The rhizome and roots used in the experiments subsequently recorded were collected in the vicinity of Madison between the dates of October 1 and November 12, 1924. Part of the drug was harvested in the Pharmaceutical Garden where two rows of the plant have been cultivated under natural shade since 1920 or 1921. Part of the material was from wild plants that had not been transplanted previously. In harvesting the material in the Garden, the buds were separated and replanted. So far as the wild material is concerned, the same course was followed in order to insure against extermination of the plant.



Rhizomes and Roots of Podophyllum Peltatum.

RHIZOMES AND ROOTS OF PODOPHYLLUM PELTATUM.

The rhizomes show the striking difference in growth during the season of 1923 as compared with that during the season of 1924. The bud end of the new growth of rhizome, together with the roots near the bud were cut off for replanting. The remaining portion of the rhizome, together with the roots attached thereto, was dried to drug and used in the investigation here reported.

The soil was carefully removed from rhizome and roots by washing. The imperfectly drained material weighed 18,290 grams. Air dried, it weighed (November 21st) 5950 grams. The loss of 12,340 grams represents 67.4 per cent of the original weight. This is probably somewhat too high because of the imperfect

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* From the laboratory of Edward Kremers.

[1] Presented to Scientific Section, A. PH. A., Des Moines meeting, 1925.

removal of water from the washed material. Moisture determinations made separately for both rhizome and roots in connection with smaller amounts of fresh material gave the following results:

	Wt. before drying, Gm.	Wt. after drying, Gm.	Loss, per cent.
	Oven dried (at 65°).		
Rhizome	77.26	28.49	63.1
Roots	50.37	24.18	52.0
	Air dried (at room temp.).		
Rhizome	64.6	29.65	52.6
Roots	65.4	34.59	47.1

It becomes apparent that the roots contain less moisture than the rhizomes.

Separation into Rhizome and Roots.—While during digging no thought was had as to the complete removal of the roots from the soil, it seemed desirable, for reasons that will become apparent from work reported later, to separate roots from rhizome and to determine the approximate percentage of each. That this determination could not claim anything more than approximation is evident, not only for the reason just stated, but also for the reason, previously indicated, that most of the buds had been removed with a certain amount of rhizome and roots to perpetuate the species by replanting. The air-dried material was coarsely comminuted in a large iron mortar after which separation into rhizome and roots was effected by means of a very coarse sieve. The 5950.0 grams of drug previously reported, when thus treated, yielded 3990.0 grams or 67.5 per cent of rhizome and 1920.0 grams of roots, or 32.5 per cent after deducting a loss of 15 grams during comminution and one of 25 grams during separation.

Comminution.—The coarsely broken up rhizomes and roots were powdered in a disintegrator using the finer of the two sieves accompanying the machine. The 3990 grams of rhizome suffered a loss of 30 grams. Owing to an accident the 1920 grams of rootlets suffered a loss of 224 grams.

Analytical Sifting.—These powders were then sifted in a set of analytical sieves. That portion which did not pass through the No. 20 sieve is referred to as No. 0. The sifting of the rhizome powder was carried out in two lots by way of control.

Time of shaking.	Degree of fineness.	Lot I. Weight in grams.	Lot I. Percentage.	Lot II. Weight in grams.	Lot II. Percentage.
3 min.	No. 0	1.3	0.27	1.5	0.32
10 min.	No. 20	43.7	8.89	43.5	8.79
30 min.	No. 40	120.5	24.49	117.0	23.61
45 min.	No. 60	157.5	32.01	161.0	32.49
50 min.	No. 80	126.5	25.71	131.0	26.54
50 min.	No. 100	42.5	8.64	41.0	8.27
		492.0		495.5	
Loss during sifting		8.0 Gm. = 1.6 per cent		4.5 Gm. = 0.9 per cent	

During the process of sifting particularly of the No. 80 and No. 100 powders part of the drug escaped in the form of a fine dust, amounting to as high as 1.8 per cent, which caused severe irritation of the eyes. The operator used a respirator covering nose and mouth but had failed to protect the eyes.

In the sifting process of the root powder the totals only are recorded.

Degree of fineness.	Weight in grams.	Percentage.
No. 0	10.5	0.6
No. 20	480.5	28.7
No. 40	370.5	22.1
No. 60	377.0	22.5
No. 80	357.0	21.3
No. 100	80.5	4.8
	1676.0	
Loss during sifting	30.0	1.8

Assay of Rhizome.—Duplicate assays of each grade of powder were made according to the U. S. P. In place of the ordinary percolator, Soxhlet extractors with paper thimbles were used. In each case from 160 to 180 cc. of percolate were collected and the tincture evaporated to 20 cc. on a water-bath. Upon cooling and further spontaneous evaporation in a capsule numerous small crystals formed. These were separated (in several instances imperfectly) washed with a little alcohol and weighed. They were but very slightly soluble in cold alcohol, but soluble in cold water and cold 1 per cent hydrochloric acid. Their melting point, 184.5° to 186° does not correspond with that of any recorded constituent of Podophyllum. Because of their solubility in water, they cannot be regarded as a constituent of Resin of Podophyllum. Hence the weights of the crystals and of the "resin" are recorded separately.

Fineness of powd.		Weight of resin, Gm.	Percentage.	Weight of crystals, Gm.	Percentage.
No. 20	A	0.3555	3.55	0.4702	4.70
	B	0.3362	3.36	0.2576	2.57
No. 40	A	0.4017	4.01	0.2523	2.52
	B	0.4190	4.19	0.1314	1.31
No. 60	A	0.4152	4.15	0.1949	1.94
	B	0.4047	4.04	0.1604	1.60
No. 80	A	0.3871	3.87	0.1545	1.54
	B	0.3739	3.73	0.1003	1.00
No. 100	A	0.3937	3.93	0.1357	1.35
	B	0.4087	4.08	0.0989	0.98
Total		3.8957	Av. 3.89	1.9562	Av. 1.96

The irregularities in the amounts of resin obtained by assay do not admit of drawing any very definite conclusions, with possibly one exception, *viz.*, that the No. 20 powder contains least resin, average 3.4 per cent as opposed to an average of about 4.0 per cent for Nos. 40, 60 and 100 powders, whereas that of No. 80 powder is about half way between, *viz.*, 3.8 per cent.

The percentage of crystals, however, is greatest in the coarsest powder and diminishes with fair regularity as the powders become finer. Because of the difficulty in separating the small crystals from a syrupy mother liquid the duplicates do not correspond as well as in the resin assay.

ASSAY OF ROOTS.

These also were made in duplicate for each grade of powder. In this case no attempt was made to separate crystals.

Fineness of powder.	Wt. of Resin, Gm.	Percentage.
No. 20 A	0.4234	4.23
20 B	0.4286	4.28
No. 40 A	0.5746	5.74
40 B	0.5583	5.58
No. 60 A	0.5156	5.15
60 B	0.5370	5.37
No. 80 A	0.5384	5.38
80 B	0.5117	5.11
No. 100 A	0.5393	5.39
100 B	0.5371	5.37
Total	5.1580	Average percentage 5.16

The average percentage 5.16 per cent is somewhat higher than that of the rhizome, about 4 per cent. Again the No. 20 powder appears to contain somewhat less resin, *viz.*, 4.25 per cent than the finer powders. Yet it should be observed that the very next powder, *viz.*, No. 40, apparently has the highest resin content, *viz.*, 5.6 per cent.

Preparation of Resin of Podophyllum.—The U. S. P. 1910 directions were followed in every particular. Hence the percolation, so far as the preparation of the resin was concerned, was stopped when the alcoholic percolate ceased to be rendered turpid by water. The precipitated resin, was allowed to dry at room temperature in a dark place for four weeks. At the end of the period it was possible to powder the resin from the rhizome, but not that from the roots. The finished product from the rhizome was greenish brown in color and weighed 31.5 grams, hence the yield amounted to 3.15 per cent. Owing to an accident, part of the concentrate from the root was lost, hence the yield of 22.5 (= 2.25 per cent) is of no significance.

Ash Determination of Resin.—The results are herewith tabulated:

	Rhizome.		Roots.	
	I.	II.	I.	II.
Wt. of resin	0.5028 Gm.	0.4989 Gm.	0.5016 Gm.	0.5008 Gm.
Wt. of ash	0.0032 Gm.	0.0027 Gm.	0.0022 Gm.	0.0018 Gm.
Percentage of ash	0.594 per cent	0.541 per cent	0.438 per cent	0.359 per cent

Hence the ash content of the resin from the roots is somewhat lower than that of the rhizomes. However, both are well within the pharmacopœial limits of 1.5 per cent.

Sugar.—Whereas for the preparation of the official Resin, alcoholic percolation was discontinued at the point indicated by the pharmacopœial directions, it was resumed with the same menstruum because of the crystals that had been observed as previously mentioned.

The handsome crystals were observed in connection with almost every assay. Having proven their organic nature, the practical absence of inorganic matter was revealed by ash determinations which yielded 0.115 and 0.117 per cent, respectively.

Quite accidentally their sweetish taste was discovered. However, they did not reduce Fehling's solution until after hydrolysis. With phenyl hydrazine the hydrolyzed solution yielded an osazone which melted (not recrystallized) at 188°.

Collection of Drug in the Spring of 1925.—The first lot was dug April 17th on Mendota Drive near the Black Hawk Country Club grounds on the north slope of the hill. The soil was a sandy loam and there had been no recent rains. The plants were hardly above ground. The moisture determinations by the xylene method yielded 65.0 per cent for the roots and 64.5 per cent for the rhizomes.

A second lot was collected May 2nd near the Illinois Central right of way west of the Cemetery. The plants were from six to twelve inches high. Recent rains had left the soil rather moist. Moisture determinations yielded 74.0 per cent for the roots and 74.1 per cent for the rhizomes.

A third lot was collected May 19th from the same locality. Moisture determinations yielded 73.2 per cent for the roots and 73.4 per cent for the rhizomes.

P. S. The sucrose, reported above, when recrystallized by A. H. Uhl, melted at 181–182°; $[\alpha]_D = +59°$; after hydrolysis $[\alpha]_D = -11°$. For sucrose $[\alpha]_D = 66.5°$; for inverted sucrose $[\alpha]_D = -32°$. Possibly the irregularities in melting point and angle of rotation are attributable to the presence of inorganic substances as indicated by the ash content. The amount of material was not sufficient to admit of purification by repeated crystallization.

THE VOLATILE OIL OF LEDUM GRŒNLANDICUM.*

BY E. V. LYNN, ARNOLD LEHMAN AND RUSSELL CAIN.

The plants of the genus *Ledum* are small, evergreen, ericaceous shrubs, growing in swamps, bogs and other wet places in the northern part of Europe, Asia and America. The species, *grœnlandicum*, is a native of North America, where it is called Labrador Tea and used, especially by the natives as a pectoral and tonic. It differs from others of the same genus by the rusty and hairy character of the lower side of the leaf. The whole plant, and particularly the leaf, has an aromatic odor and taste which is very pleasing. The agreeable odor of *Ledum grœnlandicum* suggested the possibility of valuable volatile constituents and an attempt was made to separate them.

The plant itself, commonly known as Labrador, Continental, or James Tea, presents a shrub-like growth, the stems being very stout and branching, occasionally reaching a height of five or six feet. The shrub is an evergreen, bearing snowy white flowers in a convex cluster. The leaves are alternate and sessile, ranging in length from one to three inches. They are oval shaped, narrow and entire, with upper surface smooth and the lower composed of densely matted, red-brown hairs.

As far as could be learned, no investigational work has ever been reported on this plant, although Ledum palustre has been examined repeatedly (see references). The latter gives by steam distillation from 0.3 to 2.0 per cent of a volatile oil, the yield apparently depending upon age of plants, season, habitat, portions used, etc. The oil is a greenish or reddish viscid liquid of a penetrating narcotic odor and a pungent, unpleasant and persistent taste, and consists of a stearoptene and a liquid portion in approximately equal proportions. The latter has a boiling point of 180° to 250° C., d_{15} 0.93 to 0.96. It frequently does not separate

* Scientific Section, A. PH. A., Des Moines meeting, 1925.

any further solid by lowering the temperature, but the dissolved stearoptene may be completely removed by vacuum distillation. The liquid was found to contain a ketone, $C_{12}H_{24}O$, which can be removed by sodium bisulphite and a sesquiterpene, $C_{15}H_{24}$.

The solid, which has been called ledum camphor, is a tricyclic sesquiterpene alcohol with the formula $C_{15}H_{26}O$. It crystallizes in prisms, melting point 104–5° C., $(\alpha)_D$ in 10 per cent alcohol solution +7.98°, boiling point 282–3° C., soluble at 17.5° to the extent of 10.4 per cent. It sublimes readily in long needles but is so easily oxidized, even by the oxygen of the air, that great care must be exercised in distilling it at ordinary pressures. Dehydrating agents readily convert it into the basal sesquiterpene, ledene, which may or may not be identical with the one occurring in the oil. This artificial hydrocarbon boils at 255° C. and has a specific gravity of 0.9237 at 19° C., 0.9349 at 0° C. Sundvik has found that the camphor is a powerful poison, acting principally upon the central nervous system.

A first distillation of a small quantity of the leaves from *L. grœnlandicum* giving sufficient oil to warrant further investigation, a larger quantity was distilled with steam at 275° C. The whole plant above ground, 43.6 Kg., yielded 6.4 cc. of oil without cohobation, or a return of only 0.013 per cent. Since this was very low, even if calculated on the basis of dried material, and much smaller than would have been expected from the preliminary distillation, it was concluded that little oil was present in the stems, which constituted a large portion of the total material.

In a second distillation the fresh leaves were used with a minimum amount of stems, the yield being 12.5 cc. from 40 Kg., using the same conditions as before. The aqueous distillate, 39 liters of which had been collected, was cohobated to give 3 cc. of oil, bringing the total to 15.5 cc. a return of 0.035 per cent. Based upon dry material, this would be about 0.1 per cent which is much smaller than the minimum from *L. palustre*.

The oil from both stems and leaves was dark amber in color while the later distillate was emerald green. Both possessed a characteristic odor resembling that of the plant and also somewhat similar to that of citral. The mixed oils had a specific gravity of 0.8998 at 21.2° C. and an index of refraction of 1.4917. Fractional distillation gave the following results:

166–175°	2.0 cc.	very slight color	245–255°	0.8 cc.	
175–185°	1.5 cc.		255–265°	1.4 cc.	amber color
185–195°	4.0 cc.		265–275°	1.6 cc.	
195–205°	1.3 cc.		275–285°	1.0 cc.	
205–215°	0.5 cc.		285–295°	0.6 cc.	
215–225°	0.9 cc.		295–305°	0.1 cc.	blue color
225–235°	0.7 cc.		305–310°	0.1 cc.	
235–245°	0.3 cc.		Residue		dark brown or black

The mixed fractions up to 255° gave a specific gravity at 24.4° of 0.8626, solubility in water 3.4 per cent, phenols by sodium hydroxide 2.8 per cent, aldehydes by sodium bisulphite 1.7 per cent, $(\alpha)_D$ +1.21°. The mixed fractions 255–295° gave specific gravity at 24.4° 0.8922, solubility in water 5.0 per cent, phenols 3.5 per cent, aldehydes 0.71 per cent. All fractions were cooled in a freezing mixture but no solid material could be separated.

The amount of material at hand precluded any closer investigation but the

results obtained indicate several conclusions. There is very little if any ledum camphor or other stearoptene present in this species, although the season of the year, March, in which it was collected may have an influence. Fractionation points to limited quantity of phenols and aldehydes and little or no dicyclic terpenes, while strongly suggesting the presence of considerable monocyclic. Sesquiterpenes are undoubtedly contained in the oil, as is also the blue hydrocarbon azulene, which has been previously found in milfoil and wild ginger oils.

We are awaiting the opportunity to gather larger quantities of material in order to make a more extended investigation.

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COLLEGE OF PHARMACY,
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EXTRACTS OF ACONITUM COLUMBIANUM.

BY O. A. BEATH.

The principal aconite species of the rocky mountain region is *Aconitum columbianum*. While it is widely distributed, its peculiar habitat localizes the plant to shady moist areas.

The plant was investigated by the author primarily for its poisonous properties. Interest in the study suggested a comparison of its therapeutic value with that of U. S. P. drug, the imported species.

Samples[1] were collected at two distinct periods of growth, the first when the plants were well started in their initial growth, *i. e.*, pre-flowering stage, and the second when in full bloom. The tubers (mother and daughter) were separated from the above ground portions in each collection. The method used in the chemical assay was the U. S. P. IX, official for aconite. The following is a summary of the results:

Tubers (flowering)	−0.839%
Tubers (young plants)	−0.774%
Above ground (flowering)	−0.350%
Above ground (young plants)	−0.758%

[1] Identified by Professor Aven Nelson, Botanist, University of Wyoming.

The above ground parts were a mixture of stems, leaves, etc., and in all probability greatly lowered the total percentage of alkaloids because of the coarse stems.

Fluidextracts[1] were prepared (U. S. P. for aconite) from the same plant units as used in the chemical assay and their physiological strength determined. The results of extracts administered subcutaneously follow:

Tubers (*flowering*).—A dose of 0.010 cc. per Gm. body weight of pig did not kill in 24 hours, but the pig died in 48 hours.

Comparatively non-toxic.

Tubers (*young plants*).—A dose of 0.010 cc. per Gm. body weight caused only a slight toxic action. The least toxic of the four extracts.

Above ground (*flowering*).—Dose of 0.010 cc. per Gm. body weight of pig failed to kill, the animal was seriously affected.

Comparatively non-toxic.

Above ground (*young plants*).—Dose 0.010 cc. per Gm. body weight failed to kill, the animal was seriously affected.

Arranged in the order of activity as indicated by these tests, the tubers from flowering plants appear slightly more toxic than the others, the above ground portions from either growth appear about on a par, while the tubers from young plants were notably weak in their toxic action. All the fluidextracts are less than 0.5% as active as the Standard F. E. aconite, which is recommended in the U. S. P. This, of course, shows the native aconite to be decidedly less active than the imported species referred to as official.

Two tinctures were prepared in 1925, one representing tubers fully matured and the other the seeds. Each was injected subcutaneously into guinea-pigs in doses up to 0.020 cc. per Gm. and failed to kill the pigs. The larger doses were given in concentrations of the original samples so that alcohol would not be a factor. The pigs which received the largest doses were quite sick, the symptoms resembling those of aconite poisoning but they survived. The activity of these samples is, therefore, less than 2% of that of a standard tincture of aconite roots, but may be as strong as 1% of standard. While the tinctures of the mature tubers and seeds gave approximately three times the strength of the sub-mature preparations, yet it is to be observed that the mature parts of the aconite are still greatly under the official tincture requirements.

Alkaloidal assays of the 1925 collection were omitted. Inasmuch as the chemical assays of aconite have little or no significance there did not appear to be justifiable reasons for checking on the later samples.

As mentioned above, *Aconitum columbianum* occurs quite widely distributed in the Rocky Mountain region and economically is classed as a poisonous plant, referable to livestock. Our research laboratory has been interested primarily in the plant's effect upon range animals rather than its possible utilization as a source of aconite products. While most investigators refer to this species as a poisonous plant, yet stock losses are negligible, undoubtedly because of its being comparatively non-toxic.

[1] Biological assay made by the research laboratory of Parke, Davis & Company, Detroit.

THE ASSAY OF PHOSPHORIC ACID AND THE SODIUM PHOSPHATES.*,[1]

BY ANNA F. SHIREMAN.

INTRODUCTION.

The present official phosphate assay is a determination of the phosphate radical and not of the hydrogen ion. If one sodium phosphate were contaminated with another, this defect would not be revealed by the pharmacopœial assay. In addition to this, it is almost impossible to obtain checks on different samples of the same specimen when exactly the same routine is followed. Stearn, Farr and Knowlton (1) of the Mallinckrodt Chemical Company have investigated this latter problem extensively and have published a modification of the U. S. P. method which they found satisfactory. However, in my work I had no better results with the modification than with the original procedure.

Many investigators have attempted to titrate phosphoric acid directly or indirectly and consequently many methods are described in the literature. Most of these are, for various reasons, impractical for pharmacopœial testing. The most recent pharmaceutical chemists to work on the problem are Moerk and Hughes (2) of the Philadelphia College of Pharmacy and Science. They have published several methods, the best of which seems to be one in which a mixed indicator of methyl orange and indigo carmine is used for titration after sodium chloride has been added to the phosphate solution.

A survey of the literature on the subject shows that it is a well-known fact that the first hydrogen can be titrated with methyl orange and the second with phenolphthalein. The problem, then, becomes one of finding a method for complete titration. The methods studied fall, in general, into the following types:

1. Silver nitrate
2. Trinitrobenzene
3. Rosalic acid
4. Mixed indicator (Moerk and Hughes).
5. Phenolphthalein with a metallic chloride or an alkaline earth salt.

The purpose of my investigations was to find a more satisfactory method or a satisfactory modification of the above methods. I experimented more with phenolphthalein in the presence of calcium chloride than with any other method, as it seemed to be the most promising.

EXPERIMENTAL WORK.

In all my experiments I used "Baker's Analyzed" monosodium, disodium and trisodium phosphates and Merck's syrupy phosphoric acid. The di- and trisodium phosphates were very efflorescent, and monosodium phosphate was hygroscopic. As uniform samples were difficult to obtain under these conditions, I dried each to constant weight at 110° C. and made up solutions containing a definite weight of the respective salts. Phosphoric acid solutions were made by diluting a weighed sample of the concentrated acid. These solutions were determined gravimetrically for per cent of phosphate by Mahin's (3) method of precipita-

* Read before Scientific Section, A. PH. A., Des Moines meeting, 1925.

[1] Material from thesis written under the direction of Dean C. B. Jordan, Purdue University.

ing the phosphate with "Magnesia Mixture" as $MgNH_4PO_4$, heating the precipitate and weighing it as $Mg_2P_2O_7$.

All alkali titrations were made with carbonate free sodium hydroxide solution, prepared by adding an excess of barium nitrate and filtering. This solution was preserved by covering it with a layer of liquid petrolatum.

FIRST EXPERIMENT WITH SILVER NITRATE METHOD.

Phosphoric Acid.—The U. S. P. determination was performed as follows:

"Pour about one gram of phosphoric acid into a tared flask, stopper and weigh accurately, transfer it to a 100-mil flask and make it up to 100 mils with distilled water. Transfer 10 mils of this solution to a 100-mil graduated flask, add a drop of phenolphthalein solution (one gram in 100 mils of alcohol) and neutralize it with potassium hydroxide solution (5%, chloride free). Add 50 mils of tenth-normal silver nitrate solution and agitate it, gradually adding zinc oxide (chloride free) in small portions until the liquid is neutral to litmus paper. Now add distilled water to make the liquid measure 100 mils, agitate it thoroughly, filter through a dry filter, collect 50 mils of the filtrate, add 2 mils of nitric acid and 2 mils of ferric ammonium sulphate (10%) and determine the excess of silver nitrate by titration with tenth-normal potassium sulphocyanate to the production of a red color. When calculated to the amount of phosphoric acid originally taken, it shows not less than 85% nor more than 88% of phosphoric acid. Each mil of tenth normal silver nitrate used corresponds to 0.0032687 grams of phosphoric acid. Each gram of phosphoric acid corresponds to not less than 260 mils nor more than 269 mils of tenth-normal silver nitrate."

The results were:

TABLE I.—U. S. P. METHOD.

H_3PO_4.	$N/10$ $AgNO_3$.	$N/10$ KCNS.	Excess $AgNO_3$.	% H_3PO_4.	Grav. % H_3PO_4.
0.008698 Gm.	12.42 cc.	9.98 cc.	2.44 cc.	91.7	88.16
0.008698 Gm.	12.42 cc.	9.98 cc.	2.44 cc.	91.7	88.16
0.008698 Gm.	12.42 cc.	9.98 cc.	2.44 cc.	91.7	88.16
0.008698 Gm.	12.42 cc.	9.98 cc.	2.44 cc.	91.7	88.16
0.043488 Gm.	18.63 cc.	6.99 cc.	11.64 cc.	89.8	84.66
0.043488 Gm.	18.63 cc.	6.99 cc.	11.64 cc.	89.8	84.66
0.043488 Gm.	18.63 cc.	6.99 cc.	11.64 cc.	89.8	84.66
0.043488 Gm.	18.63 cc.	6.99 cc.	11.64 cc.	89.8	84.66

Disodium Phosphate, Exsiccated.—The directions and results were:

"Introduce about 0.15 gram of dried sodium phosphate, accurately weighed into a 100-mil graduated flask, dissolve it in 10 mils of distilled water, add 50 mils of tenth-normal silver nitrate and agitate the mixture well. Then gradually add zinc oxide (chloride free) in small portions until the mixture is neutral to litmus paper. Then add distilled water to make 100 mils, agitate the mixture thoroughly, filter through a dry filter, rejecting the first 20 mils of filtrate, collect 50 mils of the subsequent filtrate, add 2 mils of nitric acid and 2 mils of ferric ammonium sulphate (10%) and titrate with tenth-normal potassium sulphocyanate to the production of a permanent red color. It shows not less than 98% of Na_2HPO_4. Each mil of tenth-normal silver nitrate used corresponds to 0.004735 grams of Na_2HPO_4. Each gram of exsiccated sodium phosphate, previously dried, corresponds to not less than 207 mils of tenth-normal silver nitrate."

TABLE II.—U. S. P. METHOD.

Na_2HPO_4.	$N/10$ $AgNO_3$.	$N/10$ KCNS.	Excess $AgNO_3$.	% Na_2HPO_4.	Grav. % Na_2HPO_4.
0.03515 Gm.	12.42 cc.	4.99 cc.	7.43 cc.	100.09	99.9
0.03515 Gm.	12.42 cc.	4.99 cc.	7.43 cc.	100.09	99.9
0.03515 Gm.	12.42 cc.	4.99 cc.	7.43 cc.	100.09	99.9
0.03515 Gm.	12.42 cc.	4.99 cc.	7.43 cc.	100.09	99.9

When the U. S. P. method was modified according to the directions of Stearn, Farr and Knowlton (1), my results with phosphoric acid checked almost exactly with those obtained by the U. S. P. method. Disodium phosphate was about 1% lower than the gravimetric, whereas the U. S. P. determination was 1% higher. My results were as follows:

TABLE III.—MODIFIED U. S. P. METHOD.

H_3PO_4.	$N/10$ $AgNO_3$.	$N/10$ KCNS.	Excess $AgNO_3$.	% H_3PO_4.	Grav. % H_3PO_4.
0.1044 Gm. ($^1/_4$ of it titrated)	12.42 cc.	5.1 cc.	7.32 cc.	91.6	84.66
0.1044 Gm. ($^1/_4$ of it titrated)	12.42 cc.	5.1 cc.	7.32 cc.	91.6	84.66
0.1044 Gm. ($^1/_4$ of it titrated)	12.42 cc.	5.1 cc.	7.32 cc.	91.6	84.66
0.1044 Gm. ($^1/_4$ of it titrated)	12.42 cc.	5.1 cc.	7.32 cc.	91.6	84.66
0.1044 Gm. ($^1/_4$ of it titrated)	12.42 cc.	5.1 cc.	7.32 cc.	91.6	84.66

TABLE IV.—MODIFIED U. S. P. METHOD.

Na_2HPO_4.	$N/10$ $AgNO_3$.	$N/10$ KCNS.	Excess $AgNO_3$.	% Na_2HPO_4.	Grav. % Na_2HPO_4.
0.1405 Gm. ($^1/_4$ of it titrated)	12.42 cc.	4.55 cc.	7.87 cc.	105.0	99.07
0.1405 Gm. ($^1/_4$ of it titrated)	12.42 cc.	4.66 cc.	7.76 cc.	98.2	99.07
0.1405 Gm. ($^1/_4$ of it titrated)	12.42 cc.	4.66 cc.	7.76 cc.	98.2	99.07
0.1405 Gm. ($^1/_4$ of it titrated)	12.42 cc.	4.66 cc.	7.76 cc.	98.2	99.07

Great care must be taken in titrating with KCNS as 0.1 cc. too much KCNS causes an error of about 5% in the sodium salt.

SECOND EXPERIMENT WITH TRINITROBENZENE INDICATOR.

This indicator was obtained from Coleman and Bell Co. A solution of it was made to contain 0.5 gram in 100 cc. of alcohol. The p_H range given on the label was 13.0 to 14.3.

The phosphoric acid solution used was standardized gravimetrically, and 20 cc. of it were found to be equivalent to 18.5 cc. of an exactly $N/10$ acid. Twenty cc. were then measured into a flask to which 1 cc. of the indicator solution was added, and it was titrated directly with $N/10$ NaOH. The first appearance of a yellow color was very definite and came almost at the end-point of the second hydrogen. Eighteen and five-tenth cc. $N/10$ acid required 13 cc. of $N/10$ base to bring this color change. This was true of every one of a number of titrations and was as definite as the first appearance of a pink color when phenolphthalein is used. When the acid was heated to boiling before adding the indicator and titrating, 18.5 cc. $N/10$ acid required only 12.8 cc. $N/10$ base to bring the first yellow color of the previous titrations. Theoretically, 13.3-cc. base should have been used to neutralize two-thirds of the acid (the first two hydrogens), so the results with the cold solution were more nearly correct for this point.

As more base was added the yellow deepened to an orange and the point of complete neutralization was a brilliant orange, but it was not noticeably different from the color when 3 cc. more or less alkali had been added. In other words the change was so gradual, that even with the use of a standard (made from an acid mixture of cobalt nitrate, ferric chloride and potassium dichromate solutions) it was impossible to read the exact end-point.

Trinitrobenzene was slight yellow in a disodium phosphate solution, and as the same gradual change took place in the complete neutralization of this salt, I did no more work with it.

TABLE V.—TRINITROBENZENE.

$N/10$ H_3PO_4.	1st yellow $N/10$ NaOH.	% H_3PO_4.	Deep orange $N/10$ NaOH.	% H_3PO_4.	Grav. % H_3PO_4.
0.0696 Gm. = 18.5 cc.	13.0 cc. (cold)	61.0	16–22 cc.	75.1–103	86.8
0.0696 Gm. = 18.5 cc.	13.0 cc. (cold)	61.0	16–22 cc.	75.1–103	86.8
0.0696 Gm. = 18.5 cc.	13.0 cc. (cold)	61.0	16–22 cc.	75.1–103	86.8
0.0696 Gm. = 18.5 cc.	13.0 cc. (cold)	61.0	16–22 cc.	75.1–103	86.8
0.0696 Gm. = 18.5 cc.	12.8 cc. (boil)	60.1	16–22 cc.	75.1–103	86.8
0.0696 Gm. = 18.5 cc.	12.8 cc. (boil)	60.1	16–22 cc.	75.1–103	86.8
0.0696 Gm. = 18.5 cc.	12.8 cc. (boil)	60.1	16–22 cc.	75.1–103	86.8

Different combinations with the indicator were attempted, but none were successful. The addition of calcium chloride to the acid, before titration, raised the amount of $N/10$ NaOH to 30 cc. for the neutralization of 18.5 cc. phosphoric acid, but here again the change was so gradual that the exact point could not be determined.

TABLE VI.—TRINITROBENZENE AND CALCIUM CHLORIDE.

$N/10$ H_3PO_4.	$N/10$ NaOH.	% H_3PO_4.	Grav. % H_3PO_4.
0.0696 Gm. = 18.5 cc.	27–31 cc.	126–145	86.8
0.0696 Gm. = 18.5 cc.	27–31 cc.	126–145	86.8
0.0696 Gm. = 18.5 cc.	27–31 cc.	126–145	86.8
0.0696 Gm. = 18.5 cc.	27–31 cc.	126–145	86.8

In a mixture of trinitrobenzene with phenolphthalein, the red of the latter obliterated the yellow of the former and the end-point came at the point of two-thirds neutralization.

Following the suggestion of the Moerk and Hughes (2) mixed indicator, I mixed $^1/_2$ cc. trinitrobenzene with $^1/_2$ cc. indigo carmine solution (1 Gm. in 150 cc. water). Since the color of the latter is destroyed by warm alkali, I added my indicator mixture to a hot solution of phosphoric acid (to boiling) and titrated with NaOH to the first definite greenish color. The end-point came in the neighborhood of the theoretical but was again too indefinite to read sharply. However, the results were more promising than those of the foregoing attempts, and I have recorded them in the following table:

TABLE VII.

$N/10$ H_3PO_4.	$N/10$ NaOH.	% H_3PO_4.	Grav. % H_3PO_4.
0.0696 Gm. = 18.5 cc.	19.0 cc.	89.2	86.8
0.0696 Gm. = 18.5 cc.	18.6 cc.	87.6	86.8
0.0696 Gm. = 18.5 cc.	22.0 cc.	103.0	86.8
0.0696 Gm. = 18.5 cc.	19.5 cc.	91.5	86.8
0.0696 Gm. = 18.5 cc.	18.6 cc.	87.6	86.8
0.0696 Gm. = 18.5 cc.	20.5 cc.	96.2	86.8
0.0696 Gm. = 18.5 cc.	20.0 cc.	93.9	86.8
0.0696 Gm. = 18.5 cc.	20.5 cc.	96.2	86.8

THIRD EXPERIMENT WITH ROSOLIC ACID.

In this experiment a method recommended by Schimpf (4) was used. To 20 cc. phosphoric acid (equivalent to 18.8 cc. $N/10$), were added 29.82 cc. $N/10$ NaOH, three drops of rosolic acid (one gram in 10 cc. diluted alcohol, and water to make 100 cc.) and 25 cc. of approximately $N/10$ neutral barium nitrate solution. The

mixture was heated to boiling and titrated hot with $N/10$ HCl to determine the excess of NaOH. The color change was very gradual and concordant results were not obtained with uniform procedure. The results were:

TABLE VIII.

H_3PO_4.	$BaCl_2$.	$N/10$ NaOH.	$N/10$ HCl.	% H_3PO_4.	Grav. % H_3PO_4.
20 cc. = 0.0696 Gm.	25 cc.	29.82 cc.	15.12 cc.	69.0	88.16
20 cc. = 0.0696 Gm.	25 cc.	29.82 cc.	13.70 cc.	75.6	88.16
20 cc. = 0.0696 Gm.	25 cc.	29.82 cc.	15.12 cc.	69.0	88.16
20 cc. = 0.0696 Gm.	25 cc.	29.82 cc.	13.50 cc.	76.6	88.16
20 cc. = 0.0696 Gm.	25 cc.	29.82 cc.	13.70 cc.	75.6	88.16
20 cc. = 0.0696 Gm.	25 cc.	29.82 cc.	13.70 cc.	75.6	88.16

FOURTH EXPERIMENT WITH MIXED INDICATOR.

In this method I followed the directions of Moerk and Hughes (2) as to solutions and procedure. The method for phosphoric acid is:

"To liquid (100 cc. NaCl solution), add 0.2 cc. each of methyl orange and indigo carmine solutions. Add $N/10$ HCl drop by drop until green color changes without producing a violet color. Divide into two parts. To (1) add measured quantity phosphoric acid solution and titrate with $N/10$ NaOH until color matches reserve."

The following results were obtained:

TABLE IX.

H_3PO_4.	$N/10$ NaOH.	NaCl (10%)	% H_3PO_4.	Grav. % H_3PO_4.
20 cc. = 0.06958 Gm.	19.63 cc.	50 cc.	92.20	84.66
20 cc. = 0.06958 Gm.	19.20 cc.	50 cc.	91.90	84.66
20 cc. = 0.06958 Gm.	19.00 cc.	50 cc.	89.20	84.66
10 cc. = 0.03479 Gm.	9.30 cc.	50 cc.	87.37	84.66
10 cc. = 0.03479 Gm.	9.20 cc.	50 cc.	86.40	84.66
10 cc. = 0.03479 Gm.	9.30 cc.	50 cc.	87.37	84.66
10 cc. = 0.03479 Gm.	9.30 cc.	50 cc.	87.37	84.66
10 cc. = 0.03479 Gm.	9.20 cc.	50 cc.	86.40	84.66
10 cc. = 0.03479 Gm.	9.30 cc.	50 cc.	87.37	84.66
10 cc. = 0.03479 Gm.	9.30 cc.	50 cc.	87.37	84.66
10 cc. = 0.03479 Gm.	9.30 cc.	50 cc.	87.37	84.66
10 cc. = 0.03479 Gm.	9.30 cc.	50 cc.	87.37	84.66
10 cc. = 0.03479 Gm.	9.20 cc.	50 cc.	86.40	84.66

When phosphoric acid was added to the solution containing the indicator, the color was deep purple. At the one-third point (first hydrogen) it changed quickly to a blue. This changed to a more greenish blue as more alkali was added and the final end-point came at the first distinct green. After one learns this point it is quite easy to obtain concordant results as the change always comes at the same point; but for one who is not familiar with the determination, this point is very difficult to distinguish as the change is gradual. My first results were high for this reason.

The residual method for determining Na_2HPO_4 is:

"Use same directions as were used for phosphoric acid until the solution is divided into two parts. To (1) add a measured quantity of $N/10$ acid (excess) and titrate with $N/10$ NaOH to match reserve. Add to reserve 10 cc. disodium phosphate solution and same quantity of $N/10$ acid as was added to solution (1). Titrate to same color with $N/10$ NaOH."

My results were:

TABLE X.

Na_2HPO_4.	$N/10$ HCl.	1 $N/10$ NaOH.	2 $N/10$ NaOH.	Dif. 1 and 2.	% salt.	Grav. %.
10 cc. = 0.1406 Gm.	25 cc.	22.3 cc.	13.80 cc.	8.50 cc.	85.30	99.07
10 cc. = 0.1406 Gm.	25 cc.	22.3 cc.	13.50 cc.	8.80 cc.	88.80	99.07
10 cc. = 0.1406 Gm.	25 cc.	22.3 cc.	13.50 cc.	8.80 cc.	88.80	99.07
10 cc. = 0.1406 Gm.	25 cc.	24.0 cc.	14.98 cc.	9.02 cc.	91.12	99.07
10 cc. = 0.1406 Gm.	25 cc.	22.3 cc.	13.50 cc.	8.80 cc.	88.80	99.07
10 cc. = 0.1406 Gm.	25 cc.	24.0 cc.	14.98 cc.	9.02 cc.	91.12	99.07
10 cc. = 0.1406 Gm.	25 cc.	24.0 cc.	14.98 cc.	9.02 cc.	91.12	99.07
10 cc. = 0.1406 Gm.	25 cc.	24.0 cc.	14.98 cc.	9.02 cc.	91.12	99.07
10 cc. = 0.1406 Gm.	25 cc.	24.0 cc.	14.98 cc.	9.02 cc.	91.12	99.07

Although I titrated to the same end-point as in the phosphoric acid determination, the final per cent does not check so well with the gravimetric.

FIFTH EXPERIMENT WITH PHENOLPHTHALEIN AND CALCIUM CHLORIDE.

In my first experiments I followed the suggestions of Blitz and Marcus (5) and determined the first hydrogen with methyl orange, the second with phenolphthalein, and the third with phenolphthalein after calcium chloride had been added. No heat was used in the first series, but the effect of increasing amounts of calcium chloride was tried. The calcium chloride solution was measured only approximately. The indicators were made according to U. S. P. IX and three drops were used in a titration. The end-point of methyl orange was the first yellow, and of phenolphthalein, the first pink.

My results were:

TABLE XI.—ROOM TEMPERATURE.

H_3PO_4.	$N/10$ $CaCl_2$.	M. O. $N/10$ NaOH.	M. O. $N/10$ NaOH calc.	Phen. $N/10$ NaOH.	Phen. $N/10$ NaOH calc.	% acid.	Grav. %.
25.0 cc. = 0.09006 Gm.	0.0 cc.	7.8 cc.	7.8 cc.	15.4 cc.	15.4 cc.	....	83.01
25.0 cc. = 0.09006 Gm.	12.5 cc.	7.8 cc.	7.8 cc.	18.9 cc.	23.4 cc.	68.3	83.01
25.0 cc. = 0.09006 Gm.	25.0 cc.	7.8 cc.	7.8 cc.	22.2 cc.	23.4 cc.	80.5	83.01
25.0 cc. = 0.09006 Gm.	50.0 cc.	7.8 cc.	7.8 cc.	22.7 cc.	23.4 cc.	82.3	83.01
25.0 cc. = 0.09006 Gm.	75.0 cc.	7.8 cc.	7.8 cc.	22.5 cc.	23.4 cc.	81.6	83.01
12.5 cc. = 0.04503 Gm.	50.0 cc.	3.9 cc.	3.9 cc.	11.4 cc.	11.7 cc.	82.7	83.01
12.5 cc. = 0.04503 Gm.	75.0 cc.	3.8 cc.	3.9 cc.	11.6 cc.	11.7 cc.	84.2	83.01
12.5 cc. = 0.04503 Gm.	100.0 cc.	3.8 cc.	3.9 cc.	11.4 cc.	11.7 cc.	82.7	83.01
12.5 cc. = 0.04503 Gm.	125.0 cc.	3.7 cc.	3.9 cc.	11.5 cc.	11.7 cc.	83.4	83.01
12.5 cc. = 0.04503 Gm.	200.0 cc.	3.6 cc.	3.9 cc.	12.3 cc.	11.7 cc.	89.2	83.01

According to Blitz, Marcus (5) and Prideaux (6) when calcium chloride is added to phosphoric acid, the precipitate consists almost entirely of tertiary calcium phosphate. If this be true one should be able to titrate the HCl formed and obtain accurately the per cent of acid present. However, the percentages fall below the gravimetric, indicating incomplete precipitation of tertiary calcium phosphate. The amount of calcium chloride present did not affect the titration very much unless a great excess was added. With methyl orange and calcium chloride the solution remained perfectly clear at the end-point, but phenolphthalein and calcium chloride gave a finely divided white precipitate which did not form until NaOH was added. This does not obscure the end-point.

Next I heated the phosphoric acid and calcium chloride solutions to boiling, added three drops of phenolphthalein and titrated with $N/10$ NaOH. The results were:

TABLE XII.—HEATED TO BOILING.

H_3PO_4.	$CaCl_2$.	Phen. N/10 NaOH calc.	Phen. N/10 NaOH.	% H_3PO_4.	Grav. %.
12.5 cc. = 0.04503 Gm.	25.0 cc.	12.3 cc.	11.7 cc.	89.2	85.01
12.5 cc. = 0.04503 Gm.	37.5 cc.	12.3 cc.	11.7 cc.	89.2	85.01
12.5 cc. = 0.04503 Gm.	50.0 cc.	12.2 cc.	11.7 cc.	88.5	85.01
12.5 cc. = 0.04503 Gm.	62.5 cc.	11.8 cc.	11.7 cc.	85.6	85.01
12.5 cc. = 0.04503 Gm.	75.0 cc.	11.7 cc.	11.7 cc.	84.9	85.01
12.5 cc. = 0.04503 Gm.	87.5 cc.	12.1 cc.	11.7 cc.	87.8	85.01
12.5 cc. = 0.04503 Gm.	100.0 cc.	11.7 cc.	11.7 cc.	84.9	85.01
12.5 cc. = 0.04503 Gm.	25.0 cc.	12.2 cc.	11.7 cc.	88.5	85.01
12.5 cc. = 0.04503 Gm.	50.0 cc.	12.2 cc.	11.7 cc.	88.5	85.01
12.5 cc. = 0.04503 Gm.	75.0 cc.	12.2 cc.	11.7 cc.	88.5	85.01
12.5 cc. = 0.04503 Gm.	100.0 cc.	11.7 cc.	11.7 cc.	84.9	85.01

The majority of the titrations in this series ran high, although several checked perfectly. Since cold solutions gave low percentages and boiling gave high ones, I next tried 75° C., then 60–65° C. and the respective results were:

TABLE XIII.—75° C.

H_3PO_4.	$CaCl_2$.	Phen. N/10 NaOH.	Phen. N/10 NaOH calc.	% H_3PO_4.	Grav. %.
12.5 cc. = 0.04503 Gm.	25 cc.	11.8 cc.	11.7 cc.	85.6	85.01
12.5 cc. = 0.04503 Gm.	50 cc.	11.8 cc.	11.7 cc.	85.6	85.01
12.5 cc. = 0.04503 Gm.	75 cc.	11.8 cc.	11.7 cc.	85.6	85.01
12.5 cc. = 0.04503 Gm.	100 cc.	11.6 cc.	11.7 cc.	84.1	85.01

TABLE XIV.—60–65° C.

H_3PO_4.	$CaCl_2$.	N/10 NaOH.	N/10 NaOH calc.	% H_3PO_4.	Grav. %.
12.5 cc. = 0.04503 Gm.	25 cc.	11.7 cc.	11.70 cc.	84.90	85.01
12.5 cc. = 0.04503 Gm.	50 cc.	11.7 cc.	11.70 cc.	84.90	85.01
12.5 cc. = 0.04503 Gm.	75 cc.	11.7 cc.	11.70 cc.	84.90	85.01
12.5 cc. = 0.04503 Gm.	100 cc.	10.0 cc.	11.70 cc.	72.60	85.01
10.0 cc. = 0.03479 Gm.	10 cc.	9.4 cc.	9.38 cc.	88.31	88.16
10.0 cc. = 0.03479 Gm.	10 cc.	10.5 cc.	9.38 cc.	98.60	88.16
10.0 cc. = 0.03479 Gm.	20 cc.	9.4 cc.	9.38 cc.	88.31	88.16
10.0 cc. = 0.03479 Gm.	20 cc.	9.0 cc.	9.38 cc.	84.50	88.16
10.0 cc. = 0.03479 Gm.	30 cc.	9.4 cc.	9.38 cc.	88.31	88.16
10.0 cc. = 0.03479 Gm.	30 cc.	9.4 cc.	9.38 cc.	88.31	88.16
10.0 cc. = 0.03479 Gm.	40 cc.	9.4 cc.	9.38 cc.	88.31	88.16
10.0 cc. = 0.03479 Gm.	40 cc.	9.4 cc.	9.38 cc.	88.31	88.16
10.0 cc. = 0.03479 Gm.	50 cc.	10.5 cc.	9.38 cc.	98.60	88.16
10.0 cc. = 0.03479 Gm.	50 cc.	9.4 cc.	9.38 cc.	88.31	88.16
10.0 cc. = 0.03479 Gm.	30 cc.	9.4 cc.	9.38 cc.	88.31	88.16
10.0 cc. = 0.03479 Gm.	30 cc.	9.1 cc.	9.38 cc.	85.40	88.16
10.0 cc. = 0.03479 Gm.	30 cc.	9.4 cc.	9.38 cc.	88.31	88.16
10.0 cc. = 0.03479 Gm.	30 cc.	9.4 cc.	9.38 cc.	88.31	88.16
10.0 cc. = 0.03479 Gm.	30 cc.	9.0 cc.	9.38 cc.	84.50	88.16

The following series is one of titrations on a sample of unknown strength, which was determined gravimetrically after the volumetric results had been obtained. The percentages were all too high but were fairly uniform.

Practically the same procedure was followed with disodium phosphate as with the acid. It was heated with calcium chloride to various temperatures, as

TABLE XV.—60–65° C. UNKNOWN SAMPLE.

H_3PO_4.	$CaCl_2$.	$N/10$ NaOH.	% H_3PO_4.	Grav. %.
0.0695 Gm.	50 cc.	18.57 cc.	87.2	84.66
0.0695 Gm.	50 cc.	18.70 cc.	87.8	84.66
0.0695 Gm.	50 cc.	18.45 cc.	86.6	84.66
0.0695 Gm.	50 cc.	18.57 cc.	87.2	84.66
0.0695 Gm.	50 cc.	18.57 cc.	87.2	84.66

indicated below, three drops of phenolphthalein were added and the hot solution was titrated with $N/10$ NaOH. The results were:

TABLE XVI.—65° C.

Anhyd. Na_2HPO_4.	$N/10$ $CaCl_2$.	$N/10$ NaOH.	$N/10$ NaOH calc.	% Na_2HPO_4.	Grav. %.
20 cc. = 0.2812 Gm.	35 cc.	17.80 cc.	19.6 cc.	89.90	99.07
20 cc. = 0.2812 Gm.	35 cc.	18.00 cc.	19.6 cc.	90.90	99.07
20 cc. = 0.2812 Gm.	35 cc.	18.23 cc.	19.6 cc.	92.08	99.07
20 cc. = 0.2812 Gm.	35 cc.	19.00 cc.	19.6 cc.	95.90	99.07
20 cc. = 0.2812 Gm.	50 cc.	18.80 cc.	19.6 cc.	95.30	99.07
20 cc. = 0.2812 Gm.	50 cc.	18.45 cc.	19.6 cc.	93.20	99.07
20 cc. = 0.2812 Gm.	50 cc.	18.80 cc.	19.6 cc.	95.30	99.07

TABLE XVII.—TO BOILING.

Anhyd. Na_2HPO_4.	$CaCl_2$.	$N/10$ NaOH.	$N/10$ NaOH calc.	% Na_2HPO_4.	Grav. %.
10 cc. = 0.1406 Gm.	20 cc.	10.3 cc.	9.8 cc.	104	99.07
10 cc. = 0.1406 Gm.	20 cc.	10.3 cc.	9.8 cc.	104	99.07

TABLE XVIII.—70–75° C.

Na_2HPO_4.	$CaCl_2$.	$N/10$ NaOH.	$N/10$ NaOH calc.	% Na_2HPO_4.	Grav. %.
0.1406 Gm.	20 cc.	9.85 cc.	9.8 cc.	99.5	99.07
0.1406 Gm.	20 cc.	9.00 cc.	9.8 cc.	90.9	99.07
0.1406 Gm.	20 cc.	9.80 cc.	9.8 cc.	99.0	99.07
0.1406 Gm.	20 cc.	9.80 cc.	9.8 cc.	99.0	99.07
0.1406 Gm.	20 cc.	9.85 cc.	9.8 cc.	99.5	99.07
0.1406 Gm.	20 cc.	9.80 cc.	9.8 cc.	99.0	99.07
0.1406 Gm.	20 cc.	9.90 cc.	9.8 cc.	100.0	99.07
0.1406 Gm.	20 cc.	9.80 cc.	9.8 cc.	99.0	99.07
0.1406 Gm.	20 cc.	9.85 cc.	9.8 cc.	99.5	99.07
0.1406 Gm.	20 cc.	9.80 cc.	9.8 cc.	99.0	99.07
0.1406 Gm.	20 cc.	9.80 cc.	9.8 cc.	99.0	99.07
0.1406 Gm.	20 cc.	9.80 cc.	9.8 cc.	99.0	99.07
0.1406 Gm.	20 cc.	9.80 cc.	9.8 cc.	99.0	99.07

In this case the white precipitate appeared as soon as the calcium chloride was added. The temperature was 70–65° C. as in the titration of the acid.

Although monosodium phosphate is not official, I experimented with it and found that this method gave practically the same results as with the acid and the disodium salt. The following results were obtained:

TABLE XIX.

Anhyd. Na_2HPO_4.	$N/10$ $CaCl_2$.	$N/10$ NaOH.	% NaH_2PO_4.	Grav. %.	Temperature.
0.1192 Gm.	20 cc.	20.6 cc.	103.7 cc.	100.06	60–65° C.
0.1192 Gm.	35 cc.	20.6 cc.	103.7 cc.	100.06	60–65°
0.1192 Gm.	35 cc.	20.3 cc.	102.2 cc.	100.06	60–65°
0.1192 Gm.	35 cc.	19.5 cc.	98.2 cc.	100.06	50°

0.1192 Gm.	35 cc.	19.8 cc.	99.7 cc.	100.06 cc.	55–60°
0.1192 Gm.	35 cc.	19.8 cc.	99.7 cc.	100.06 cc.	55–60°
0.1192 Gm.	35 cc.	19.7 cc.	99.2 cc.	100.06 cc.	55–60°
0.1192 Gm.	35 cc.	19.8 cc.	99.7 cc.	100.06 cc.	55–60°
0.1192 Gm.	35 cc.	19.9 cc.	100.2 cc.	100.06 cc.	55–60°
0.1192 Gm.	35 cc.	19.9 cc.	100.2 cc.	100.06 cc.	55–60°
0.1192 Gm.	35 cc.	19.8 cc.	99.7 cc.	100.06 cc.	55–60°

The optimum temperature for the titration of this salt is 55–60° C.

SUMMARY.

A consideration of the data which I have submitted shows that there is no known indicator which will completely titrate phosphoric acid or the sodium phosphates. Theoretically, trinitrobenzene should be satisfactory as the p_H range is the required one, but in practice, the gradual change of color after the first yellow, renders it worthless.

In my opinion the only remaining solutions to the problem are, first, complete precipitation of the phosphate with the formation of a strong acid which can be titrated and, second, the addition of sodium chloride to increase the hydrogen-ion dissociation of the acid.

In the first method a number of precipitants may be used. My experiments and those of Stearn, Farr and Knowlton have shown that there are discrepancies when silver nitrate is added to precipitate the phosphate. Lead nitrate, soluble magnesium salts and barium nitrate have all been found unsatisfactory by previous investigators. Of all the precipitants suggested, to completely precipitate the phosphate as the tertiary salt, calcium chloride was given by the greatest number of workers.

After the phosphate has been precipitated, the next problem is that of finding a suitable indicator to titrate the acid formed. Many have been tested, among which are methyl red, rosolic acid, lacmoid, litmus and phenolphthalein. If calcium chloride is the precipitant, phenolphthalein is satisfactory. It is an indicator which is familiar to all analysts and I think that is a desirable, though not an absolutely essential quality of an indicator for pharmacopœial testing.

I did most of my work with phenolphthalein and calcium chloride, because in every way this method seemed most promising. In none of the literature on this method did I find reference to variation in the results of complete titration because of temperature changes. My experiments show that this is the controlling factor in the titration, and if the requirement of the optimum temperature is fulfilled, concordant results will be obtained with any weight of sample unless there is an unreasonable excess of calcium chloride present.

The second method, in which sodium chloride is added seems inferior to the above method for several reasons. The complicated mixed indicator of methyl orange and indigo carmine is the only satisfactory one and the reading of its end-point is difficult. In addition, Na_2HPO_4 cannot be titrated directly, but must first be combined with hydrochloric acid, because indigo carmine's blue color is destroyed in an alkaline solution. Moerk and Hughes, who originated the method, state that the results are influenced by weight of sample, normality of standard solutions and the amount of sodium chloride present. These factors are very important ones in assaying unknown samples and are sufficient to bar the method from the Pharmacopœia.

If the temperature is controlled, I believe there is no doubt of the superiority of the calcium chloride-phenolphthalein method over all the others studied and I think it would be suitable for use in the Pharmacopœia.

CONCLUSIONS.

1. The U. S. P. IX method of phosphate assay is unsatisfactory because it gives high results, which do not check on different samples of the same specimen. When modified according to Stearn, Farr and Knowlton, the results are no better. Both methods are long and tedious.

2. Rosolic acid cannot be used as an indicator because the results are too low.

3. Trinitrobenzene, although it will titrate the third hydrogen, cannot be used as the color change is too gradual. A combination of this indicator with phenolphthalein gives the color change of the latter and titrates only the second hydrogen. Calcium chloride added causes an abnormal rise of the end-point accompanied by an abnormal percentage. Combination of the indicator with indigo carmine gave an end-point in the neighborhood of the theoretical, but it was too difficult to distinguish to be of any value.

4. The mixed indicator of methyl orange and indigo carmine is fairly satisfactory. It gives good results with the acid, but low results with disodium phosphate.

5. The best method for the complete titration of phosphoric acid and mono- and disodium phosphates is the use of phenolphthalein at the temperature of 55–70° C., after calcium chloride has been added to the phosphate solution. The determination is not tedious nor long, the end-point of phenolphthalein is well-known, and the percentages check well with the gravimetric. The proportion of phosphate to calcium chloride should be 1:2–1:5.

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A SIMPLE TEST FOR DIFFERENTIATING BETWEEN MILD AND STRONG SILVER PROTEIN.

BY HARRY S. KEELAN.

The U. S. P. X test for differentiating between strong and mild silver protein subjects the fermentation of sugar, by means of yeast, to the action of solutions of the silver proteins, of definite concentrations. Under these conditions, the strong types allow little or no carbon dioxide to form, while the mild types permit abundant gas formation. It has been deemed desirable, however, to find a simpler test, which might be carried out in a drug store. Several tests have been suggested, among them an electrometric silver-ion concentration determination. While this clearly showed that the strong type was high in silver ions, and the mild type was low, it was considered too complicated.

Since the silver-ion concentration differentiates the types, the problem resolves itself into the search for a method of getting the solutions into such a shape that these ions can be recognized by qualitative tests. The colloid must be coagulated. The usual coagulating agents, heat and acids, cannot be applied here, for the former would cause the reduction of the existing silver ions to metallic silver, and the latter would produce silver ions from metallic silver. Therefore, the protein must be coagulated, thus causing the coagulation of the silver. This must be done by some agent which will have no effect upon the existing ions or the metallic silver. There are two methods of coagulating protein—dehydration and the formation of insoluble compounds. Anhydrous magnesium sulphate does both, and therefore suggested itself as the ideal coagulant. A few successful experiments were made, and the following test proposed:

One Gm. of the unknown silver preparation is dissolved in 10 cc. of distilled water, and 6 Gm. of exsiccated magnesium sulphate is added. The whole is stirred for three or four minutes until coagulation takes place. The mixture is then filtered. The filtrate should be water-white. Dilute the filtrate to double its volume with distilled water, and add 2 or 3 drops of concentrated hydrochloric acid. A turbidity or precipitate shows that the preparation under test belongs to the strong silver protein type, whereas, the absence of any turbidity or precipitate shows that the product belongs to the mild type.

This method was tried on the following preparations:

Solargentum	no turbidity	hence mild type
Protargentum	heavy precipitate	hence strong type
Protargol	heavy precipitate	hence strong type
Silvol	no turbidity	hence mild type
Proganol	turbidity	hence strong type
Collargollum	no turbidity	hence mild type

Attempts were made to see if the one-gram sample could be reduced to $^1/_2$ gram. For this purpose, Proganol was chosen because it gave only a turbidity in the above tests while the other two gave discernible precipitates. We still obtained a faint turbidity with the half-gram sample, but prefer to use one gram, in case some product properly classed as the strong type but of a silver-ion concentration even lower than proganol, should be under test.

The test is very simple and only about five minutes is required to make it. A further classification of those preparations within the strong group could be obtained by allowing, in all cases, the filter to drain completely, and then titrating a definite volume of the filtrate against a dilute standard solution of thio-cyanate. The turbidity noticed in the case of proganol as compared to the heavy precipitate obtained when protargol and protargentum are tested in this manner, shows a silver-ion concentration lower than the last two. This has been substantiated by electrometric determination made in this laboratory.

BROOKLYN RESEARCH LABORATORIES,
E. R. SQUIBB & SONS.

THE DETERMINATION OF THE AMOUNT OF OIL IN SPIRIT OF PEPPERMINT.*

BY C. V. NETZ.

Spirit, or Essence of Peppermint, when manufactured according to the Pharmacopœia, is an alcoholic preparation containing approximately 10 per cent of Oil of Peppermint, with chlorophyll, extracted from the herb, as color. The Pharmacopœia directs the maceration of the moist herb with the mixture of alcohol and oil, filtration of the mixture to remove the herb and, finally, the completion of the volume by passing sufficient alcohol through the filter. The completed preparation is leaf green in color, due to the alcohol-soluble chlorophyll.

The therapeutically active ingredient is the Oil of Peppermint, in which the important constituent is the complex alcohol, menthol, of which the U. S. P. requires not less than 50 per cent. With the present high price of peppermint oil, the manufacturer is tempted to reduce the amount in the spirit below the official requirement in order to increase his profit or to enable him to meet cut price competition. The ethical way for the retailer to insure his dispensing the U. S. P. Spirit of Peppermint is to manufacture it himself. But because of the present method of taxing alcohol, the manufacturer can make a U. S. P. preparation and sell it for considerably less than the cost of the ingredients to the retailer, so one can hardly blame the thrifty pharmacist for purchasing his requirement of Spirit of Peppermint, instead of manufacturing it.

The analysis of Spirit of Peppermint for the percentage of oil is a simple matter, requiring only one piece of apparatus, a Cassia flask, which is not ordinarily possessed by every pharmacist. This flask is conical in shape, with a long narrow neck, which is graduated from 0 to 10 cc., and holds about 125 cc. up to the 0 graduation on the neck, the exact capacity being immaterial.

The method as given by Charles H. LaWall and LeRoy Forman, in the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION about ten years ago, is as follows:

> Introduce 25 cc. of the Spirit, accurately measured, into a Cassia flask which holds approximately 125 cc. to the 0 graduation in the neck. If a graduate is used to measure the Spirit, drain it well and rinse with portions of warm water, adding rinsings to the contents of the flask. Add 5 cc. of diluted hydrochloric acid to the Spirit and rinsings in the flask, and then follow with sufficient water at 80° C. to bring the upper level of the liquid to about the 8 cc.

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graduation in the neck. The oil will immediately separate and rise to the top. Tap the flask gently upon the table top to loosen any globules of oil that may be adhering to the sides of the flask, or impart a rotary motion to the flask by rolling it between the palms of the hands. Immerse the flask in a dish of water at 80° C. for 15 minutes, and again tap the flask to loosen any more particles of oil. Allow to stand at room temperature for 12 hours or longer and take the reading of the volume of separated oil by subtracting the reading of the extreme lower limit of the meniscus at the lower level of the oil from the extreme upper limit of the meniscus at the top of the layer. Divide the volume of oil by 25 cc. and multiply by 100 to get the per cent of oil in the Spirit.

The method is simply the measurement of the volume of oil which separates from a measured volume of Spirit, upon largely diluting with water. It will give fairly accurate results if ordinary care is used in measuring out the Spirit and in reading the volume of separated oil. The largest source of error, aside from that from manipulation, is the oil that remains in solution in the diluted alcohol.

To determine whether or not this oil in solution was sufficient to produce appreciable error in the determination a ten per cent solution of U. S. P. Oil of Peppermint in 95 per cent alcohol, without the herb, was tested by the above method and results giving 10 per cent of oil were obtained, thus showing that the method was accurate within 0.1 per cent. Next a number of samples of Spirit of Peppermint were carefully made up according to the U. S. P. directions and using the same oil as in the above solution, with peppermint leaves for coloring. These samples gave only 9.8 per cent of oil upon analysis. More samples were made up in which the herb and filter paper were carefully rinsed with the available amount of alcohol to bring all the oil through into the preparation, but the results were still 9.8 per cent. The conclusion was that the herb and filter paper held some of the oil, and that the amount of alcohol allowable to complete the volume is insufficient to wash the entire amount of oil into the filtrate.

Recognition of this fact must be made when testing a sample of Spirit. A preparation yielding 9.8 per cent of oil may still be within the U. S. P. requirement, as it specifies that 10 per cent of oil must be used and it does not say that the Spirit must yield 10 per cent of oil. The above experiments showed that one may put 10 per cent of oil into a spirit and obtain only 9.8 per cent upon analysis.

The analysis of 33 samples of Spirit of Peppermint indicated that there are very few poor preparations on the market. Seventeen samples yielded between 9.8 per cent and 10.2 per cent of oil; three samples gave 11 per cent or over; thirteen samples were below 9.8 per cent in strength, only four or five, however, being below sufficiently to consider them of poor quality. The poorest sample gave 6.8 per cent of oil.

The universal charge for an ounce of this preparation was 40c in all except one instance—a cut-rate store—where 25c purchased a bottle labeled "1 fluid-ounce," which actually yielded only $^5/_6$ of an ounce, containing about 8.6 per cent of oil.

It might be interesting to note that about a year ago a retailer tested 2 gallons of Spirit of Peppermint by this method, which he had purchased from an eastern wholesaler, and found that it contained only 8 per cent of oil. The manufacturer, upon being informed of this, immediately sent 2 more gallons, and admitted that because of inefficiency in their manufacturing department they, unknowingly, had placed some sub-standard spirit on the market.

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Pharm. Zentralh., 67 (1926), 33

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Boll. chim.-farm., 64 (1925), 257; through *Chem. Abstr.*, 20 (1926), 477

SIXTH CONGRESS OF INDUSTRIAL CHEMISTRY TO MEET IN BRUSSELS.

The American Pharmaceutical Association has been invited to send a delegate to the sixth Congress of Industrial Chemistry, which convenes in Brussels, September 26 to October 3. Papers for the program are solicited by the Congress. The Association was represented at the fourth Congress, held in Bordeaux, by H. C. Fuller, of Washington.

UNIVERSITY OF WISCONSIN HAS AN ADDITION TO ITS PHARMACEUTICAL POTS.

When after the New York meeting of the A. Ph. A., in 1907, **Dr. Edward Kremers** went to Europe on a mission for the Government, he and Mrs. Kremers called at the Pharmacie Anglaise in Antwerp to see the valuable collection of pharmaceutical pots of its owner. M. Comein presented two of his Delft pots to Mrs. Kremers; one of these bears the label E(xtractum) Camomill(ae) and the other U(nguentum) ad Scabiem. Recently a pot has been donated by B. F. de Hosson of Green Lake, Wis., a specimen of Delft ware, dating back more than 200 years. The latter bears the same label as the other ointment jar mentioned, but the word Schabiem is spelled with an "h," apparently an unusual form or a misspelling by the artist. The pots are all of the same design and a strange coincidence is that two of them, as indicated, were used as containers for the same preparation.

PRESIDENT DANA C. MUNRO OF THE AMERICAN HISTORICAL ASSOCIATION ASKS FOR ASSISTANCE IN SECURING HISTORICAL DATA.

President Dana C. Munro, Princeton, N. J., of the American Historical Association has stated that there is urgent need for more thorough and dispassionate studies of the history of American International Relations. He referred to the fact that a great many valuable papers and documents were still exposed to loss by fire and theft, and that it was of importance that more attention to the preservation of such material be given. The Association is launching a campaign for a million dollars for carrying on the work.

DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

THE DRUGGIST AND HIS BANK.

BY O. W. OSTERLUND.

Mr. Osterlund is President of the Belmont Trust Company, Philadelphia. For 25 years before accepting his present position Mr. Osterlund was a successful retail pharmacist and today is a director of one of the largest wholesale drug houses in the United States. His success as a banker is attested by the fact that the deposits of the bank he heads have more than doubled in the past five years. Mr. Osterlund is thus preëminently qualified to discuss from personal experience the relationship that should exist between a druggist and his bank.

"Borrow money at the bank to discount your bills." That is advice that is heard frequently, yet it is not always good policy. On the face the idea looks fine. The druggist has $500 in unpaid invoices on which he can earn a cash discount of $10 if they are paid by the tenth of the month. The cost of borrowing $500 on a 30-day note at 6 per cent interest is only $2.50. The apparent profit of the transaction is obvious.

But what happens when the 30-day note is due? During the month he has probably accumulated $500 more of unpaid invoices on which he again sees the opportunity of saving $10 by discounting them. The druggist has two choices. One is to pay the $500 note and let the invoices run to maturity, thereby losing the $10 cash discount. The other is to try to renew the note for another 30 days and again earn a profit of $7.50 on the transaction. The process can be continued indefinitely, of course, if the bank is willing to have its money so tied up. What a bank really would be doing in this case is to supply working capital for the druggist and that is not a proper function of a bank. The druggist, himself, should control the capital that he keeps permanently invested in the business. It is easy to see from the above example the embarrassment and loss which would result if the bank were to withdraw the money it, in effect, has put into the business.

The business of the bank is to supply capital for *temporary* or *unusual* needs of its customers. These transactions should be self-liquidating. The following case illustrates what I mean:

A druggist in ..... had been unusually successful in selling imported holiday novelties. In October 1925, he received the invoice for these goods and along with it a letter offering him an *extra* 5 per cent discount, in addition to the regular 2 per cent, if he would pay cash immediately. Ordinarily the invoice was not due until January 1. As the invoice totaled over $2000 the extra 5 per cent offered was a considerable saving. Five per cent plus two per cent equals $138. To pay over $2000 cash in October, however, would have seriously reduced his working capital. As a result he arranged at his bank a 90-day note, due January 15, for $2000. The interest at 6 per cent amounted to only $30, so that on the transaction he made an extra profit of about $108. Most important of all, however, is the fact that the transaction was self-liquidating. Past experience had told him that the holiday merchandise would be converted profitably into

* Instructor of Merchandising, Wharton School of Finance and Commerce, University of Pennsylvania; Lecturer on Business Administration, Philadelphia College of Pharmacy and Science.

cash by early in January and that by the time the note was due he would have on hand this *extra* cash to meet it.

The other kind of credit which a bank can supply properly to a druggist is by loans on what are known as improvement mortgages. Suppose, for instance, a druggist believes that by spending $5000 on his property to modernize the building and equipment he can increase greatly the value of his property and the volume of his business.

If the proposition looks practical to the banker and the druggist has enough of a substantial equity in his property, the bank may advance him the money to make the improvements. In such cases the money is not handed to the borrower to be spent as he chooses. All contracts and awards are first approved by the bank. Then, as the work progresses, the bank advances the proportion of the total cost that it has agreed to loan. Suppose the total cost of the improvements to be made amounts to $6000 of which the bank has agreed to advance $4000. Then when $600 worth of work has been completed and approved by an officer of the bank, the bank advances $400 from the total credit allowed. The idea is, by not paying the contractor in full, his continued interest to the completion of the work is assured. As other work is completed, money is advanced by the bank in like proportion until the entire loan has been paid out. The balance of the cost of the improvements may be paid for by the druggist from his own money or he may arrange with the builder or contractor to carry the balance (secured by a note), as deferred payment for a period long enough to convert it into a regular investment mortgage or a building and loan mortgage.

Three things determine whether or not a druggist is entitled to loans from his bank, either for self-liquidating transactions or for improvement mortgage loans. These three things are: The character of the borrower, his business ability and his financial strength. I cannot emphasize too strongly, therefore, that as soon as he starts in business a druggist should establish and cultivate friendly relations with the officers of his bank. He should not hesitate to discuss his problems with them frankly and openly because many times the banker with his wide contacts is in a position to give him valuable advice. For the same reason, he should file with his bank, as soon as possible, a statement of his financial strength. Any bank can supply the proper form. He should do this regardless of whether or not he has any immediate need for a loan. The filing of the statement has two values—By submitting it beforehand the bank may be able to point out dangerous weaknesses and suggest practical ways to correct them. Second, demands for extra money sometimes come with surprising suddenness and if the bank already is acquainted with the applicant's financial strength it is in a position to act instantly.

Another thing that impresses a banker is the size of a depositor's balance. Many druggists think that by keeping their bank balance at a minimum they are saving money. That is not so. It is perfectly human for a banker to be more interested in the accounts which are profitable, just as a druggist is more interested in the customers who buy something more than postage stamps and cigarettes from him. Aside from this, an average bank balance of any size—say $500—immediately establishes (all other things considered) a credit for him at the bank of $2500, which the bank will loan him if it is to be employed for any practical business purpose.

A PROBLEM IN FINANCE.

THE FACTS AND FIGURES IN THE FOLLOWING ARTICLE ARE TRUE BUT, FOR OBVIOUS REASONS, CORRECT NAMES AND LOCATIONS CANNOT BE STATED.

Arthur Miller looked worried. He had every right to be. He was facing for the first time a situation that for years he had tried to avoid. Now we find him staring at column after column of penciled figures. Ten years in the retail drug business and this is where he stands.

MILLER'S OBLIGATIONS.

Money owed on overdue invoices	$ 3876.43	
Borrowed from his bank	3500.00	
Borrowed from friends and relatives	4800.00	
Mortgage on store	5000.00	
Mortgage on home	2500.00	
		$19,676.43

As security for these obligations he has:

Cash in the bank	$ 78.14	
Cash in the store	25.00	
Accounts receivable	None	
Merchandise in the store (cost price)	5225.31	
Store fixtures (depreciated value)	1893.40	
Store property	15000.00	
Home	5000.00	
		$27,221.85

With nearly $4000 owing on overdue invoices, the postman delivered to Mr. Miller a continuous barrage of collection letters, along with notices and threats from attorneys. All this did not add to his peace of mind.

His creditors have every right to be anxious. His position is indeed precarious. Although his assets exceed his liabilities by nearly 40 per cent, his liabilities are in cash and his assets are in a form which cannot be converted readily or quickly into cash, except at a severe loss.

Many people will wonder how a man intelligent enough to run a drug store for 10 years would allow himself to get into such a position. The causes are simple enough in this case.

Mr. Miller banked his money only once a week and between times he always carried his receipts in a thick roll in his pocket. With $200 or $300 in pocket most of the week, anyone knows how easy it is to regard that money as profits and spend it accordingly. That was the case with Mr. Miller.

At first when bills came due it was easy to borrow at the bank (because he had an excellent reputation both personally and as a druggist). When the bank would lend no more money, trusting relatives were called upon. When this source dried up, it was a simple matter to put a mortgage, first, upon the store, and then upon his home.

Mr. Miller's second fatal weakness was that he kept no books. Accurate, well-kept records would have told him the truth about his business long before 10 years had elapsed, in fact the very day it began to happen. Now, however, Mr. Miller is not interested to know what he should have done 10 years ago.

What he wants to know is how to save his home and his business from bankruptcy. He has $78.14 in the bank and creditors clamoring for $3876.43 that he owes them. What shall he do?

Fortunately his business is inherently sound. Located as he is in a country town he obtains full prices for his merchandise. Almost the only records Mr. Miller has are a tabulation of his sales and the stubs in his check book. A study of these shows about the following average relationship between income and expenses.

Sales average $50.00 daily of	$1500 a month	100%
Cost of this merchandise averages	930	62
Fair rental value of the store	100	7
Mr. Miller's salary	217	14
Boy's salary	17	1
Other expenses	100	7
Profit	136	9

Of the store income of $1500, it will be noted that Mr. Miller receives the following:

Allowance for rent	$100 a month	
Salary	217	
Profit	136	$453

This he applies as follows:

Household expenses	$130 a month	
Personal expenses	87	
Interest on mortgage and loans	79	$296
Balance applicable to payment of old bills		$157

To pay the old bills at the rate of $157 a month thus will require over 2 years. Another course is to place a $4000 installment (or building and loan) mortgage on his store building. This would be paid off in 6 to 7 years at the rate of $65 to $75 a month. The remainder of his surplus could be applied to reducing his bank loans and consequent interest charges.

Mr. Miller is aggressive, however, and believes, in addition, that the $50 daily sales he averages are by no means the upper limit. But to increase sales he must have peace of mind. The funding of his overdue obligations will bring him that. An accurate, easily understood set of books will insure him future freedom from financial worry.

If, as a result of his efforts, he is able to increase his sales only 10 per cent, the following are the results he can expect:

Monthly sales (average)	$1650	100%
Cost of this merchandise	1023	62
Rental value of the store	100	6
Mr. Miller's salary	217	13
Boy's salary	17	1
Other expenses	110	7
Profit	183	11

Thus a 10 per cent increase in sales produces almost a 35 per cent increase in profit and also gives him a balance available for paying old obligations of $204 instead of $157.

SEASONABLE DISPLAYS FOR APRIL AND MAY.

Perfumes	Face powders	Housecleaning aids
Perfume atomizers	Compacts	Camphor, moth balls, cedar flakes
Toilet waters	Sachets	Clothing bags

Insecticides and germicides

MANUFACTURING PHARMACY IN THE RETAIL STORE OR WHAT SHOULD THE PHARMACIST MANUFACTURE?*

BY W. W. McNEARY.

From the remotest ages the Apothecary, more recently styled the Pharmacist, has been pictured among his bottles, stills, kettles, mortars and pestles, preparing and compounding his medicaments for the alleviation or cure of the ills of his fellow-man and, until comparatively recent years, the Apothecary, or Pharmacist as we will hereinafter designate him, prepared almost everything that he sold in the way of medicines.

In the last half-century however, due to the advancement of the sciences, the spread of education and the introduction of machinery, came the tendency to do things in a big way and pharmacy yielded to the inevitable.

During the past fifty years large manufacturing concerns have sprung up, which distribute their products for retail through the agent who once upon a time prepared these same products himself, although in a much smaller way. Later, and perhaps on account of this, came a tendency to supplement the coffers of the "Pharmaceutical Household" by the introduction of what we now call side-lines, until at the present time it would seem that these have almost completely crowded out the more professional activities of pharmacy.

However, other causes are partly responsible for this seeming metamorphosis; we might cite the increased values of corner properties, the higher cost of that which we now term overhead, and the larger number of pharmacies which have greatly multiplied in the last generation.

The many varieties of small stores, such as cigar stores, restaurants, toy shops, notion and jewelry stores, with the development of the chain and department stores, have well-nigh been eliminated, especially in suburban districts, and have contributed toward making the corner drug store the logical distribution point for many articles not obtainable in the department store, but of usefulness in a community, the sales of which would not be sufficient to support individual stores of the type I have just mentioned. These items represent profitable lines for the pharmacist who must of necessity be conveniently located for distributing medicines to the sick.

However, it is not to be supposed that the practice of pharmacy, or the manufacturing, compounding and distribution of drugs, has become less on this account alone, for such is not the case by any means. It may be interesting information

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* Read before Philadelphia Branch, A. Ph. A. February meeting, 1926. Request made by the Branch that the article be printed in the Jour. A. Ph. A.

that there are more drugs sold in one week in Philadelphia to-day than were sold in one year in Philadelphia 50 years ago.

There were more pharmacists graduated in the last two years in Philadelphia than were graduated between the years of 1850 and 1875. There is more capital invested in equipment of drug stores than ever before, and it naturally follows that there are vastly more drugs manufactured to-day than ever before in the history of pharmacy.

Now we come to the question of who is doing the manufacturing and I would say at the start that we have two kinds of manufacturers, "the large manufacturer" and "the small manufacturer." Who are the large manufacturers? Foolish question No. 1. They are dotted all over the country and known to all, they still have occasion to manufacture Compound Cathartic Pills, and in this class we have another manufacturer, although you may not recognize him by that title—the jobber or wholesaler, who is always prepared to supply you with a pint of Aromatic Spirit of Ammonia or a gallon of Peppermint Water.

Who is the small manufacturer? Foolish question No. 2. He is none other than the pharmacist, with a *nom de plume*, at the corner. You will recognize him readily, however, as the "Cut-Price-Druggist;" also more or less favorably known by the kind of automobile he drives, the quality of his cigars or perhaps by the number of specially engraved prescription blanks he may exhibit back of his prescription counter but, unfortunately, in too many cases, not by the number or quality of the preparations he exhibits from his own laboratory or the fact that he takes pride in his pharmaceutical manufacturing, nor do all of this class fully recognize their obligations to see that the quality of the preparations dispensed in prescriptions is up to standard. His life-long friend and best customer may be on a bed of sickness attended by a physician who puts his dependence in the quality of the ingredients of the prescription prescribed by him. The individual of this class often fills the prescription from preparations secured from sources which were obtained at the lowest available prices and considers his obligation as well as the prescription fulfilled. These words are harsh. Alas! they are sometimes, if not often, true.

Now we come to the consideration of what the pharmacist should make and what he should purchase ready-made. There are no rules to be followed but broadly speaking I would say that he should make:

1. *Everything that he can prepare better than he can buy ready-made.*—Under this head I would class all preparations that are prone to deteriorate rapidly such as Belladonna Ointment and all ointments having a lard base, spirits, medicinal waters, syrup of citric acid, syrup of acacia, lime water, aromatic spirit of ammonia and solution of magnesium citrate.

2. *All preparations that can be made at a saving in cost.*—Under this head comes everything, in a general way, used in the pharmacy not otherwise classified, and all preparations in the making of which the technic is simple and where short processes apply; most of the waters, syrups, liquors, tinctures, certain small lots of hypodermic tablets, capsules, etc.

3. *All preparations where accuracy is not dependent upon physiological or chemical standardization.*—This excludes all potent tinctures, such as digitalis, strophanthus, aconite, belladonna, physostigma, etc. I would exclude all such

preparations for the reason that the processes are too involved or the time and facilities available do not permit of manufacture in the average retail pharmacy.

4. I would include all preparations, not otherwise classified, that are not dependent upon elaborate machinery and quantity production. I would exclude such preparations as zinc ointment, mercurial ointment, distilled water, distilled rose water, Unna's paste (if used in large quantities), fluidextracts, etc.

5. I would manufacture many preparations and sell them under my own name. Why? Because they can usually be made better and made cheaper; because of the pride I would have in being able to say to a customer, "This is my own preparation; I made it." Because I would know that if the preparation is a good one the customer will be back for more; because my clerks would be kept busy during dull business periods and on rainy days. I would thereby evidence my knowledge of pharmacy, and my clerks would be trained to become pharmacists. Some one may contend that he can buy these preparations cheaper than they can be made in the retail pharmacy—$2.00 per dozen, less 10%, 5%—and 2% for cash, and no bother. But he is not always absolutely certain that he is getting what he pays for. I question whether he takes the extra 2% because that kind of a chap doesn't always pay his bills on time. The purchase must be paid for in 30 days and if the gross lot order is not turned by that time the goods may have to be marked down in order to get rid of them. In these purchases the pharmacist must invest a lot of hard cash in stock, whereas if he made his own preparations the only expense involved would be the ingredients, container and label. He has the education, he has the brains (or is supposed to have), he has the help, he has the crude materials which he must of necessity stock, because he is a pharmacist, by name at any rate, and he doesn't have to pay the big bill at the end of the month in order to get that 2 per cent for cash. I don't expect that what I have said will meet with general approval but, at any rate, it is good pharmacy. I have proved it in my own experience and I know many highly successful pharmacists who have worked along these lines and found therein their salvation.

All other preparations that for good and sufficient reasons may not be made in the pharmacy should be purchased from reputable manufacturers (or jobbers) of whom we have many. With regard to all preparations, no matter by whom prepared, the moral obligation, if not the legal obligation, rests with the manufacturers, but the purchaser is also morally bound, and cannot permit the price to be the only consideration.

In conclusion I may say that I do not object to a pharmacist handling the usual side-lines; it is an economic necessity both from his own standpoint and that of the community, but when he gives all of his attention to these side-lines and neglects his laboratory and his obligations to the community, from the standpoint of service in this distinctly professional phase, he is no longer entitled to the name "pharmacist;" he is not a pharmacist.

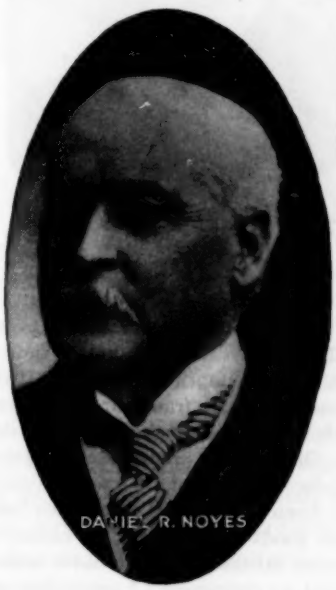
The Richmond-Times Dispatch pictorial section shows the pharmacy of Van Pelt & Brown together with its owners, who with **Clifford H. Beach** look after the prescription service. Mention has been made of the advertising messages issued by this pharmacy. In a recent folder the covers and inside pages, on which comment was made on these messages in the *Virginia Pharmacist* and JOUR. A. PH. A., are reproduced.

THE GOOD WORK OF THE WESTERN WHOLESALE DRUG ASSOCIATION (1876–1882) FOR HONEST DRUGS.*

BY L. F. KEBLER.[1]

Before the enactment of the 1848 Federal import drug law, it seemed to be a regular, systematic European business to prepare articles of different quality for the American market, one for the Atlantic trade and another, very much inferior, "for the West." A story current many years ago has it that a western merchant had occasion to go east on business. During this sojourn he felt called on to take a dose of his sovereign remedy, calomel. He purchased an ounce and took, as was his custom, a teaspoonful of it on retiring. During the night he was compelled to call a physician. The Doctor soon recognized symptoms of poisoning. With persistent inquiry he ascertained the source of the drug and sought out the druggist. After some anxious moments, the druggist exclaimed, "Why in the D—— did he not ask for western calomel?"

The AMERICAN PHARMACEUTICAL ASSOCIATION had its inception at a meeting called in 1852 to adopt a series of standards to make action uniform under the 1848 pure drug import law, and honesty in drugs, as will be seen later, was one of the corner stones of the Western Wholesale Drug Association. The question of pure drugs has always been uppermost in the doings of the former association. During three successive years, 1873–4–5, especial attention was called by one of its committees to the prevalent practice of marketing impure drugs.



Daniel R. Noyes

About this time, fifty years ago, certain western members of the wholesale drug trade became measurably perturbed over the existing methods of business. After considerable correspondence among themselves, a meeting was called at Indianapolis, March 15, 1876, and the Western Wholesale Drug Association organized. The members came from the large cities of Ohio, Indiana, Illinois, Michigan, Missouri, Wisconsin, Iowa, Minnesota, Kentucky, West Virginia and Western Pennsylvania.

During the first day's session committees were organized. The committee on legislation reported during the second day's session, through its chairman,

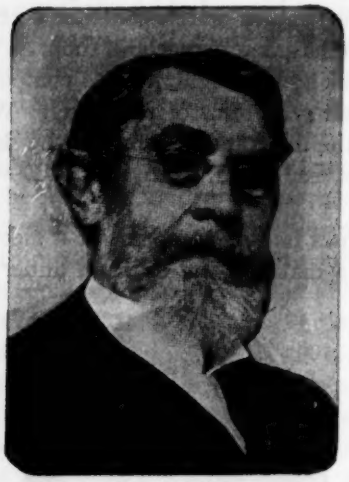
* Read before Section on Historical Pharmacy at the Des Moines meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, 1925.

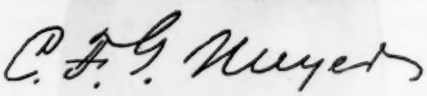
[1] Bureau of Chemistry.

Daniel R. Noyes, Jr., one of the pioneer worthies of the Northwest. The unanimously adopted report[1] contains these significant phrases:

"We emphatically condemn the adulteration of drugs and chemicals, ..." "We pledge ourselves to use our influence and our efforts to discourage it, and to elevate the standards of excellence and purity in such articles."

At the second annual meeting at Pittsburgh, 1877, C. F. G. Meyer moved (p. 14) the appointment of a committee on the Drug Market, consisting of five, to report annually on the adulterations and sophistications discovered or brought to its attention, with recommendations for improvements. The motion prevailed, and the mover, one of the great worthies of the profession of pharmacy, was appointed chairman.





The sentiments expressed in the laudable report of this committee, at the third annual gathering, Louisville, February 1878, are among the best that I ever have read on the subject. The report reads in part:[2]

Page 22.—"We need his association for many reasons, among which I may mention: to subdue the practice of adulterations: . . . to see to it that inferior articles are neither made nor sold, and not imported; . . . It behooves us to take a most decided stand against it. I learned from Dr. Squibb that the inspection of drugs at the Port of New York is still carried on, nevertheless, large quantities of very inferior or even worthless goods get into the New York market and are offered for sale. It is another sad proof that many positions in our civil service are held by unqualified and unprincipled men. It is impossible at this time for me to mention even a reasonable number where frauds are practiced. Peddlers of essential oils swarm the country, candy manufacturers, soap makers, retail dealers, and even jobbers, are taken in by the Michigan and Iowa "Oil Raisers," who, however, generally hail from New Jersey. But we can do a great deal to subdue this state of affairs collectively and individually. Let us eschew all inferior goods and frown down rascality. I have often heard it said, that, as the competition which we meet offers inferior goods at low prices, we cannot compete with them with prime goods. Gentlemen, this is a great mistake. I have never seen a business house successful for any length of time that deceived its customers. I never fear such competition.... Their days are numbered."

This report precipitated an animated discussion, wholeheartedly supporting the committee and calling attention to several notorious practices of debasing drugs. A supplemental report was made the next day, a portion of which reads:

Page 31.—"We also beg to recommend that, in order to carry out the ideas in the discussion of yesterday, the members of this Association take special pains to say to their respective brokers, and the parties they buy from direct, the drug mill owners, etc., that not only PURE goods are wanted, but that all inert and inferior goods will be discarded."

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[1] Proc. W. W. D. A., 1, 16 (1876).

[2] Proc. W. W. D. A., 3, 15 and 31 (1878).

The firm stand taken by this new organization against rascality and in favor of honest merchandise showed the real fiber of its membership. Some one may say this is just a spurt of a new body that will soon blow itself out, but let us see. The report of the Special Committee on Adulteration, at the Chicago meeting, November 1878 (two meetings were held this year) in the absence of the chairman was presented by Geo. A. Kelly, who for years wrought for pure drugs and honesty in business. Attention was called[1] to the fact that spirit of nitrous ether of any strength was freely offered at prices below the cost of the alcohol it should contain, that powdered drugs and spices were frequently quoted at prices below the cost of unpowdered goods, that drug merchandising calls for a higher degree of responsibility than the selling of pig iron, because human life is often at stake and that "only such goods should be handled as are likely to produce such effects as physicians and patients have a right to expect."

For a considerable time momentum and public sentiment have been developing for bringing about an effective control of the purity of foods and drugs. A drastic editorial on the debasing of foods and drugs appeared in the *American Grocer* in 1869. The first general food and drug law was enacted in the United States by the legislature of California in 1872. This law reads in part:

> "Every person who adulterates or dilutes any article of food, drink, drug, medicine, spirituous or malt liquor, or wine, or any article useful in compounding them, with the fraudulent intent to offer the same, or cause or permit it to be offered for sale as unadulterated or undiluted; ...is guilty of a misdemeanor."

The above is the earliest general food and drug adulteration law, enacted in the United States, known to the writer. The reasons for the enactment of such a law at that time in a Pacific coast state are not apparent. There were acts covering specific subjects like chocolate in Massachusetts, 1802, adulterating liquors with drugs, Illinois, 1845, Massachusetts, 1855, Georgia, 1857.

Among the earliest anti-adulteration drug laws in the United States may be mentioned New Mexico, 1853–54, and Oregon, 1864.

The United States Congress, in 1878, made it a misdemeanor for druggists in the District of Columbia to adulterate their wares. This act reads in part:

> "...and should he knowingly, intentionally, and fraudulently adulterate, or cause to be adulterated, such drugs, chemicals, or medical preparations, he shall be deemed guilty of a misdemeanor, and, upon conviction thereof, be liable to a penalty not exceeding one hundred dollars, and, in addition thereto, his name shall be stricken from the register."

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[1] Proc. W. W. D. A., 4, 24 (1878).

The first pure food bill was introduced into the United States Congress early in 1879 by Representative R. L. T. Beale, of Virginia. Two papers by G. T. Angell, read before the American Social Science Association, created a considerable stir. The same year the United States Congress authorized the formation of a "National Board of Health." The first annual report (1879) contains an excellent résumé by C. Lewis Diehl on drug adulteration, deterioration and substitution. The committee on legislation, D. R. Noyes, chairman, of the Western Wholesale Drug Association, at the Milwaukee meeting, says:[1]

"A carefully prepared law to prohibit and punish all adulteration of food, drink and medicine, has become a recognized need. The extent to which this adulteration is now carried on can hardly be overstated. It is bad enough in drink, as well as in food, and criminal in medicine. . . . In this connection your Committee again calls attention to the carelessness at ports of entry, which permits inferior goods to pass into the Drug Market."

The committee on adulteration at the same meeting, Mr. Kelly chairman, says: (P. 20)

"We are assured that the demand for 'Standard Goods' has largely increased in the past few years, and the 'Adulteration of Drugs' gradually is growing unpopular; owing, no doubt, to the influence of this, and kindred associations, as will result in the elevation of the character and dignity of the trade, and consequent elimination of this criminal practice."

"We are all aware that but few articles of commerce are exempt from fraudulent adulteration, that it extends into our daily food and drink as well as medicine."

Page 21.—"The fact is, so prevalent is this evil that it has become an art, and mystery, in many instances defying detection except by chemical tests and analysis. In old times the British laws visited severe and mortifying penalties upon this class; but the adulteration of medicine was considered a much more serious offence, and severer penalties were inflicted than in the case of food."

"There is no doubt that Laws with severe penalties should be enacted and enforced by each of our States to check and control this evil."

"Adulteration has been defined: The act of debasing a pure or genuine commodity for pecuniary profit, by adding to it an inferior or spurious article, or by taking from it one or more of its constituents. The object is fourfold, *viz.:* to increase the bulk or weight of the article, to improve its appearance, to give it false strength, or to rob it of its most valuable constituents, these are deliberate and intentional. There are also accidental adulterations, the result of carelessness—also deteriorations arising from spontaneous decay, etc., this last should be carefully watched by the dealer."

Page 22.—"The evil of adulteration is hard to reach, we know. No National or State act or constant sounding of "A higher grade of commercial honesty," will in themselves cure it, but to these combined with the watchful and personal vigilance of the trade we must look for progress and relief."

The National Board of Trade at its annual meeting in December 1879 offered $1000 in prizes for a draft of a "Food Adulteration Act." The report on these prizes appeared the next year[2] together with a draft of a proposed Food and Drug law based on the first prize essay, submitted by G. W. Wigner of England, where such a law had been in effect for a number of years. That part of the essay covering drugs reads:

"An article shall be deemed to be adulterated within the meaning of this Act.

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[1] Proc. W. W. D. A., 5, 16 (1879).

[2] Proc. Nat. Bd. Trade, 11, 75 (1880).

"A. In the case of drugs.

"1. If, when sold under or by a name recognized in the U. S. Pharmacopœia, it differs from the standard of strength, quality or purity laid down therein.

"2. If, when sold under or by a name recognized in the U. S. Pharmacopœia, but which is found in some other pharmacopœia, or other standard work on Materia Medica, it differs materially from the standard of strength, quality or purity laid down in such work.

"3. If its strength or purity fall below the professed standard under which it is sold."

It may be said that this prize essay contains the essentials and is the basis of all general food and drug laws enacted in the United States, so far as concerns adulteration. Mr. Geo. A. Kelly, reporting for the committee on adulteration, at the Detroit meeting in 1880,[1] refers to the "Shameful adulteration of essential oils," the desirability of adhering to the U. S. Pharmacopœial standards, and the abolishing of "such standards as 3F and 4F," referring to spirits of nitre. In concluding the report he says:

"Pay the price for pure goods, and we will get them. Ask the price for pure goods, and our customers will sustain us. Let us continue, by example, as well as precept, to hammer away at this evil of adulteration, and by the exercise of close and intelligent scrutiny and uncompromising antagonism to every form of it, we may do our full share in having it finally eradicated from the trade."

The committee on legislation urged action looking to the legal condemnation and restriction of adulterated food, drink, and medicine. Three states, New York, New Jersey and Michigan, enacted food and drug laws, in 1881, based on Wigner's Essay. Four bills on the subject were introduced in the U. S. Congress the same year. The Western Wholesale Drug Association, at its seventh annual meeting, in Cincinnati, November 1881, in adopting its legislative committee's report, put itself squarely behind such enactments in the following language:[2]

"In several states, laws for better protection for purity in foods and medicine have been passed. We some years ago urged such legislation and now desire to put ourselves on record as favoring it. The New York statute against the adulteration of food and medicine is the best and most complete yet passed."

The committee on adulteration, through its chairman, Frederick Stearns, made (p. 64) a very exhaustive and valuable report. It cites numerous cases of adulteration and refers to the disapproval of any form of legislation preventing drug adulteration by the Philadelphia Drug Exchange on the ground that sophistication is small and those who are so disposed can get pure drugs.

The Western Wholesale Drug Association, during the seven years of its existence, uniformly opposed debasement of drugs and supported every progressive movement looking to their control. At the eighth annual meeting, Cleveland, 1882, the name of the organization was changed to the National Wholesale Drug Association. It is hoped that some one who has the time and inclination will make a study of the work of the new organization and bring its activities on Federal pure food and drug legislation up to date.

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[1] Proc. W. W. D. A., 6, 32 (1880).

[2] Proc. W. W. D. A., 7, 25 (1881).

THE DEPARTMENT OF THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY

SALE OF ASPIRIN RESTRICTED TO DRUG STORES.

The ruling by the Attorney General of Iowa relating to the sale of aspirin is of more than passing interest to pharmacists in all states. We therefore quote the opinion verbatim: (H. C. C., Editor)

"Des Moines, Iowa, Feb. 19, 1926.

"The following is the ruling of the Attorney General of Iowa as to the sale of Aspirin:

"Section 2580, Code of Iowa, 1924 reads as follows;

> "'For the purposes of this chapter, drugs and medicines shall include all substances and preparations for internal or external use recognized in the United States Pharmacopœia or National Formulary, and any substance or mixture of substances intended to be used for the cure, mitigation, or prevention of disease of either man or animals.'
>
> "Section 2578 designates what persons shall be considered as engaged in the practice of pharmacy. Said section reads as follows:
>
> "'For the purpose of this title the following classes of persons shall be deemed to be engaged in the practice of pharmacy:
>
> "'1. Persons who engage in the business of selling, or offering or exposing for sale, drugs and medicines at retail.
>
> "'2. Persons who compound or dispense drugs and medicines or fill the prescriptions of licensed physicians and surgeons, dentists, or veterinarians.'
>
> "You will note that under Section 2578 a person who dispenses or exposes for sale or sells drugs and medicines at retail is considered as engaged in the practice of pharmacy. The term 'drugs and medicines' has been defined by Section 2580 to include all substances and preparations for internal or external use recognized in the United States Pharmacopœia.
>
> "We have made an examination of the last edition of the United States Pharmacopœia, being the Tenth Decennial Revision, becoming the official Pharmacopœia on the date of January 1, 1926 and we find listed therein at page 13 the following: Acidum Acetylsalicylicum, or what is more commonly known and recognized under the trade name of 'Aspirin.' In other words, under the new Pharmacopœia for this year, aspirin has come to be recognized as a drug and is listed therein. This being true, under the provisions of Section 2580, aspirin is now clearly a drug or medicine as recognized by this section, and any person dispensing same would be required to secure a license to practice pharmacy or to be a registered pharmacist as provided by Section 2578. You will note that Section 2582 provides that an unlicensed person is not to dispense drugs and, therefore, a person not a licensed pharmacist could not, in

our opinion, sell aspirin unless he came within the provisions of Section 2579 which recognizes certain exceptions where dispensing of drugs and medicines may be made by a person not a registered pharmacist.

"Under these exceptions we believe that aspirin could be dispensed by persons employed and under the supervision of a licensed pharmacist and by doctors and dentists as incident to their profession as well as by licensed pharmacists. However, we are of the opinion that the same can no longer be sold in pool halls and cigar stores unless the owner thereof who is dispensing the drug has a license as a registered pharmacist or is a doctor or dentist.

"In further support of our opinion, we respectfully call your attention to the letters of numerous physicians of this state, which you have submitted with your request, in which they state that aspirin is a drug and should be administered subject to the restrictions of all other drugs and medicines. We also call your attention to the opinion of the Attorney General of the state of Minnesota holding that aspirin is a drug and that same is to be treated as other drugs and medicines as regards its sale and dispensation.

"In conclusion I call attention to the fact that this department rendered you an opinion on the 28th day of November 1922 upon a similar question to the one which you have submitted herein at which time it was held that aspirin could be sold by others than registered pharmacists. At the time of the rendering of this opinion, Acidum Acetylsalicylicum was not included in the U. S. Pharmacopœia and, therefore, clearly would not come within the provisions of Section 2580 defining drugs and medicines. However, aspirin is now included in the Pharmacopœia issued for the year 1926 and, therefore, we believe that due to this change, the opinion of this department issued in 1922 is no longer applicable.

Yours very truly,

(Signed) S. S. FAVILLE,

Assistant Attorney General."

STATE BOARDS OF PHARMACY NEWS ITEMS.

Colorado.—A meeting recently was called in Denver by E. J. Howard, Chairman of the State Legislative Committee, for the purpose of agreeing on the essential features of a new Pharmacy Bill. As the Committee is composed of representatives from all sections of the state, it is hoped that a measure satisfactory to all will result. This tentative bill is then to be presented at the meeting of the State Pharmaceutical Association at Boulder, in order to reconcile any slight differences of opinion that may be found in the draft, so that the bill may have the solid backing of all the pharmacists of Colorado.

Illinois.—Mr. W. S. Denton, Member and President of the Illinois Board of Pharmacy Examiners, sold his business in Beardstown recently, where he has resided for the past 19 years. Mr. Denton has reëstablished himself in the drug business by purchasing the Robert A. Clarkson Drug Store in Springfield, Ill.

Indiana.—Mr. B. M. Keene, President of the Indiana Board of Pharmacy, attended the American Druggists' Fire Insurance Convention at Cincinnati, O.

Mr. John A. J. Funk and family of Galveston (Ind.), member of the Indiana Board of Pharmacy, are spending some time in Culver City, California.

Next regular meeting and examination of the Board of Pharmacy will be held April 12, 13, 14, 1926.

Maine.—Roy M. Hescock, of Monson, Me., has been elected President of the Maine State Commissioners of Pharmacy to succeed the late L. M. Chandler of Camden. Edgar F. Carswell is Secretary of the Commission and the third member is George O. Tuttle, of Portland, whom Gov. Brewster appointed to fill the vacancy caused by Mr. Chandler's death.

Massachusetts.—The Massachusetts State Pharmaceutical Association recently went on record as opposing a bill which has been introduced in the Legislature proposing to change the Pharmacy Law so that a member of the Board of Pharmacy must be the owner of a drug store in order to be eligible for membership on the Board and that he may not be eligible to succeed himself.

Oregon.—The Board has adopted a resolution which provides for two examinations each year for registered pharmacists and two for registered assistants, instead of joint examinations, which have been held three times a year heretofore. Another ruling which was adopted requires that all unregistered men employed for three years in a Prescription Department must present themselves for at least assistant's examination at the end of that time or resign their positions.

Virginia.—A bill is now pending in the Legislature which proposes to eliminate registration of Assistant Pharmacists and to allow such persons as now hold Registered Assistants' licenses to take the Registered Pharmacists' examination. It does not affect the status of those registered as Assistant Pharmacists, allowing them to continue to practice as such if they do not, subsequent to the time of the amendment becoming effective, become registered as pharmacists.

Of interest to pharmacists generally is a bill introduced in the Legislature which, if enacted, will require acids, alkalis, caustics, and like dangerous chemicals to bear a distinctive label, and prescribing a penalty for failure to so label. As this bill is a health protective measure, it is not being opposed and will work no particular hardship on pharmacists as they are already largely complying with its provisions.

The Cosmetic Tax Bill, after being unfavorably reported out by a committee, was killed on the floor of the House.

PREPARATIONS ARE BEING MADE FOR THE REVISION OF THE BRITISH PHARMACOPŒIA.

A conference of the members of the Revision Committee of the British Pharmacopœia was held February 23, at which the following were present:

Sir Donald MacAlister, Bt., M.D., (chairman), Sir Robert Bolam, Sir Humphry Rolleston, Bt., M.D., Sir Nestor Tirard, M.D., Sir Holburt Waring, M.S., Dr. R. B. Wild, Dr. J. A. Adams, Dr. Ashley W. Mackintosh, Dr. Norman Walker, M.D., Dr. Leonard Kidd, Dr. Edward Magennis, Sir John Moore, M.D., Dr. P. Hamill (secretary), and representatives of certain medical, scientific and pharmaceutical societies, *viz.*:—Mr. J. S. Whitaker, M.R.C.S., and Dr. A. W. Adams (Ministry of Health); Mr. H. H. Dale, B.C., and Lt. Col. Sir David Prain (Royal Society); Sir W. Hale-White and Mr. A. J. Clark, M.B. (Royal Society of Medicine); Dr. T. R. Elliott and Sir Walter Fletcher, M.D. (Medical Research Council); Mr. E. Lewis Lilley, M.R.C.S., and Mr. J. W. Bone, M.B. (British Medical Association); Mr. Philip F. Rowsell and Mr. Edmund White (Pharmaceutical Society); Mr. A. R. Cushny, F.R.S., and Mr. W. E. Dixon, M.B. (Physiological Society); Mr. F. G. Donnan, F.R.S. (Chemical Society); Dr. A. B. Rendle and Lt. Col. A. T. Gage, M.B. (Linnean Society); Mr. H. Todd and Mr. W. J. Hardy (Northern Ireland Pharmaceutical Society); Mr. G. A. McLean Lee and Mr. J. Smith (Pharmaceutical Society of Ireland); Mr. A. C. Chapman, F.R.S., and Mr. E. Hinks, B.Sc. (Society of Public Analysts).

The President outlined the history of past editions of the British Pharmacopœia and made a number of suggestions relative to its revision. He mentioned that Canada had asked for fuller consideration relative to its needs, and the same was also true of other possessions. At the conclusion of the conference it was stated that the proposals and suggestions made by the Dominions would have careful consideration.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

SCHOLARSHIPS IN COLLEGES OF PHARMACY.

BY ZADA M. COOPER.

Inability to answer some questions asked by a foreign organization about scholarships in colleges of pharmacy in the United States prompted an investigation.

It was a pleasure to find that considerable is being done, but it is obvious that more ought to be done.

Eight teaching fellowships and twelve research fellowships were reported. These represent, possibly, the expenditure of $13,000 annually, maintenance being about equally divided between the institutions and business firms.

There are seventy scholarships distributed among thirty-six schools. These are supported by the states, business firms, individuals, state associations, fraternities and other organizations. What sum these scholarships represent, it is impossible to say because many of them are in terms of tuitions for which amounts are not given. At a rough estimate, it may total $7000.

Without exception, the scholarships are the reward of merit on the part of the student, though quite frequently the financial need of the individual is taken into consideration. Occasionally a competitive examination is given but more often the award is made to second- or third-year students on the basis of grades made in their regular work.

Aside from these fellowships and scholarships, a few schools employ one or two part-time graduate assistants who are working for advanced degrees. Perhaps they might properly be included under the head of fellowships. The naming of these funds does not seem to be very specific, especially of scholarships and prizes. Sums as small as $30 are listed as scholarships and sums as large as $35 being called prizes.

No attempt was made to determine the number or value of prizes. However, there are many of them, a considerable proportion being given at graduation but not nearly all.

It seems to me there ought to be many more scholarships and fellowships. Men and women interested in pharmacy and possessed of wealth could use it in no better way. Deserving undergraduates should be encouraged and especially graduate work should be encouraged.

How the number of scholarships and fellowships can be materially increased I am not prepared to say. Each institution would have to set about it in its own way, the way which would be best suited to the community and its possibilities. It does occur to me that we all have state associations. Each state association could well afford to maintain several scholarships at its own state college. Nearly all colleges have fraternities and though I realize that many of them have launched into building programs that will keep them in debt for years to come, I believe they should be urged to establish scholarships.

COMMITTEE REPORTS

THE BIOLOGIC PRODUCTS COMMITTEE REQUESTS COÖPERATION OF RETAIL PHARMACISTS.

The Biologic Products Committee of the National Retail Druggists and American Pharmaceutical Associations, mailed a few months ago a postal card to practically every druggist throughout the country. Drug publications devoted valuable space to strong propaganda requesting the readers to answer these cards. Many prominent publications gave unsolicited editorials, commending the committee's work and also urging the pharmacists to answer at once. But the replies were very disappointing.

Less than 11% took the trouble to inform the committee whether or not they carry Biologic Products. Not quite 600 of the 52,000 retail pharmacists considered it necessary to answer. Why this indifference? The committee does not attempt to force anything that is undesirable upon the profession. In fact, in its report to the N. A. R. D. Convention at Memphis it distinctly stated, "We do not advocate placing Biologicals in all drug stores, only in those having good prescription trade and with pharmacists who believe in cultivating the physician either for his prescriptions or his business. We think that no retail store should attempt to carry Biologics unless the store has mapped out a policy for building up a department."

It is imperative to know the percentage of druggists handling these products, and also, how the stores that are carrying Biologicals are distributed throughout the country.

As Chairman of this Committee, I repeat my statement—Millions of patients are treated throughout the country, with this method of medication, and there will probably be millions more in the future, as the use of this method is continually increasing.

The general public and patients are quite well acquainted now with this new "method." Therefore, there has arisen the question, "Who is the dispensing medium?"

Will you give your help to solve the question? Remember that with the steady increase in medication, with biologicals and ampuls, and the natural decrease in prescriptions for other medicines, a druggist must be on the alert to preserve the "dispensing" department for the sake of the protective legislation such as the pharmacy ownership bills, or similar regulations.

It is not too late to give the Committee a hand in solving the problem involved, by digging up the card, or answering the following questions (preferably on a post card).

1. Do you handle Biological Products?
2. Give the names of the most often prescribed Biologicals and name of manufacturer.
3. Do your physicians purchase Biological Products from retail pharmacists or from physicians' supply houses?
4. Do you keep Biologicals in a refrigerator?
5. Your suggestions for Committee to improve Biological Business.

Coöperate with a committee that is willing to work and produce desirable results.

Address
151 St. Anns Ave.,
Bronx, N. Y.

Samuel S. Dworkin, Chairman
Biologic Products Committee
National Retail Druggists and
American Pharmaceutical Association

REPORT OF JOINT CONTACT COMMITTEES OF THE AMERICAN DRUG MANUFACTURERS' ASSOCIATION AND THE AMERICAN PHARMACEUTICAL MANUFACTURERS' ASSOCIATION TO THE BUREAU OF CHEMISTRY.*

We beg to submit the following report, containing recommended methods and proposed tolerances for additional hypodermic tablets, constituting a continuation of our report of November 24, 1924.

HYPODERMIC TABLETS—CODEINE PHOSPHATE.

Hypodermic tablets of codeine phosphate shall show a content of codeine alkaloid anhydrous ($C_{18}H_{21}O_3N$) not less than 61% nor greater than 73% of the labeled amount of codeine phosphate, when assayed by the method given below.

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* See also Jour. A. Ph. A., August 1925, p. 691 and January Journal, p. 112.

Dissolve not less than 20 tablets in enough distilled water to make 100 cc. and take an aliquot equivalent to at least 1 grain of codeine phosphate. Add sodium hydroxide T. S. in quantity sufficient to render the solution distinctly alkaline. Shake out with 4 successive portions of 15 cc., 10 cc., and 5 cc. of chloroform, or a sufficient quantity to complete the extraction. Shake the combined chloroform solutions with 5 cc. of distilled water and completely separate the chloroform from the aqueous layer. Evaporate the chloroform almost to dryness on the water-bath, dissolve the residue by warming with 10 cc. of $N/20$ sulphuric acid, and titrate the excess of acid with $N/50$ potassium hydroxide solution, using methyl red test solution as indicator.

Each cc. of $N/20$ sulphuric acid consumed corresponds to 0.014964 Gm. of codeine alkaloid anhydrous ($C_{18}H_{21}O_3N$).

HYPODERMIC TABLETS—PILOCARPINE HYDROCHLORIDE.

Hypodermic tablets of pilocarpine hydrochloride shall show a variation (including all tolerances) not greater than 7.5% either way from the labeled amount, when assayed by the method given below.

Dissolve not less than 20 tablets, or a sufficient number to represent not less than 1 grain of pilocarpine hydrochloride, in enough distilled water to make a clear solution, and take enough of this solution to represent at least 1 grain. Make the aqueous solution distinctly alkaline with ammonia and shake out with several portions of chloroform until tests with Mayer's reagent indicate that the aqueous solution has been completely exhausted of the alkaloid. Evaporate the combined chloroform solution to dryness on the water-bath. Dissolve the residue in a few cc. of neutral alcohol. Add 10 cc. of $N/20$ sulphuric acid and titrate the excess of acid with $N/50$ potassium hydroxide solution, using methyl red indicator.

Each cc. of $N/20$ sulphuric acid consumed corresponds to 0.012234 Gm. of pilocarpine hydrochloride ($C_{11}H_{16}O_2N_2HCl$).

HYPODERMIC TABLETS—CAFFEINE AND SODIUM BENZOATE.

Hypodermic tablets of caffeine and sodium benzoate shall show a content of caffeine alkaloid anhydrous ($C_8H_{10}O_2N_4$) not less than 43.5% nor greater than 53.7% of the labeled amount of caffeine and sodium benzoate, when assayed by the method given below.

Dissolve not less than 20 tablets in a minimum amount of distilled water in a separatory funnel. Add 3.5 cc. sodium hydroxide T. S. and shake the mixture with 4 successive portions of 20 cc., 10 cc., 10 cc., and 5 cc. of chloroform. Pass the chloroform solutions through a filter which has been previously moistened with chloroform, and wash the stem of the funnel and filter with a few cc. of hot chloroform to remove any adhering caffeine. Evaporate the combined chloroform solutions on a water-bath and dry the residue, consisting of anhydrous caffeine ($C_8H_{10}O_2N_4$) to constant weight at 80° C.

HYPODERMIC TABLETS—CAFFEINE

Hypodermic tablets of caffeine shall show a variation (including all tolerances) not greater than 7.5% either way from the labeled amount, when assayed by the method given below.

Dissolve not less than 20 tablets in a minimum amount of distilled water in a separatory funnel. Add 3.5 cc. of sodium hydroxide test solution and shake the mixture with 4 successive portions of 20 cc., 10 cc., 10 cc., and 5 cc. of chloroform.

Pass the chloroform solution through a filter which has been previously moistened with chloroform, and wash the stem of the funnel and filter with a few cc. of hot chloroform to remove any adhering caffeine. Evaporate the combined chloroform solutions on a water-bath and dry the residue, consisting of anhydrous caffeine ($C_8H_{10}O_2N_4$), to constant weight at 80° C.

Multiply the weight of this residue by 1.093 to obtain the weight of caffeine in the sample examined.

HYPODERMIC TABLETS—APOMORPHINE HYDROCHLORIDE.

Hypodermic tablets of apomorphine hydrochloride shall show a variation (including all tolerances) not greater than 9% either way from the labeled amount, when assayed by the method given below.

Dissolve not less than 20 tablets in enough distilled water to make 100 cc. and take an aliquot equivalent to at least 1 grain of apomorphine hydrochloride. To the aqueous solution

add 0.5 Gm. of sodium bicarbonate and shake out with several portions of ether, until the aqueous layer is shown to be completely exhausted of alkaloid, using Mayer's reagent for the test. Combine the ether extracts in a separatory funnel, and wash out three times with 5 cc. of distilled water, separating the water carefully and completely after each shaking and collecting it in a second separatory funnel. Shake out the united water washings once with a small portion of ether. Separate completely and add the ether washings to the combined ether extracts. To the ethereal solution add a measured excess (10 cc.) of $N/20$ sulphuric acid. Shake the mixture thoroughly and draw off the aqueous layer into a small flask or beaker. Wash the ethereal solution twice more with small portions of distilled water and add to the acid liquid. Finally, titrate the excess of acid with $N/50$ potassium hydroxide, using methyl red indicator.

Each cc. of $N/20$ sulphuric acid corresponds to 0.015636 Gm. of apomorphine hydrochloride ($C_{17}H_{17}O_2NHCl.{}^1/_2H_2O$).

HYPODERMIC TABLETS—HYOSCINE HYDROBROMIDE.

Hypodermic tablets of hyoscine hydrobromide containing small grainages ($^1/_{80}$ gr. or less) may show the same variation (including all tolerances) finally allowed for atropine sulphate tablets of like grainage, when assayed by the method given below.

Dissolve a sufficient number of tablets to represent at least 1 grain of hyoscine hydrobromide in enough distilled water to make a clear solution.

Make the aqueous solution distinctly alkaline with ammonia and shake out with several portions of chloroform, until tests with Mayer's reagent indicate that the aqueous solution has been completely exhausted of the alkaloid. Evaporate the combined chloroform solutions to dryness on the water-bath. Dissolve the residue in a few cc. of neutral alcohol. Add 10 cc. of $N/20$ sulphuric acid and titrate the excess of acid with $N/50$ potassium hydroxide, using methyl red for the indicator.

Each cc. of $N/20$ sulphuric acid consumed corresponds to 0.021912 Gm. of hyoscine hydrobromide ($C_{17}H_{21}O_4N.HBr.3H_2O$).

HYPODERMIC TABLETS—PROCAINE.

Hypodermic tablets of procaine shall show a variation (including all tolerances) not greater than 7.5% either way from the labeled amount, when assayed by the method given below.

Dissolve not less than 20 tablets in enough distilled water to make 100 cc. and take an aliquot equivalent to at least 3 grains of procaine.

Make the solution strongly alkaline by the addition of 3 cc. of strong ammonium hydroxide. Extract the ammoniacal solution four or five times with chloroform, using 15 cc. of chloroform for the first extraction and 10 cc. for the subsequent extractions. Filter into a weighed beaker and evaporate the chloroform by means of an electric fan, preferably at room temperature. (Avoid prolonged heating of the procaine base, as it appears to be slightly volatile at 100° C.).

Calculate the quantity of procaine in the sample by multiplying the weight of extracted residue by the factor 1.1545.

Take up the residue with a slight excess of $N/20$ sulphuric acid. Titrate the excess of acid with $N/50$ sodium hydroxide, using methyl red indicator. One cc. of $N/20$ sulphuric acid is equivalent to 13.63 mgms. of procaine ($C_{13}H_{20}O_2N_2HCl$).

This method is the official method of the A. O. A. C., 1925 edition, page 403.

HYPODERMIC TABLETS—MORPHINE AND ATROPINE.

Hypodermic tablets of morphine and atropine shall show a variation in content of morphine sulphate (including all tolerances) not greater than 9% either way from the labeled amount, when assayed by the method given below. The tablets shall also show the presence of atropine when subjected to a physiological test.

Take a sufficient number of tablets to represent about 8 grains of morphine sulphate, place in 100-cc. Erlenmeyer flask, and dissolve in 12 cc. of morphinated water. Add, drop by drop, 10% ammonia water, until the solution positively smells of ammonia. Shake thoroughly, and let the flask stand aside in a cool place over night. Filter off on paper the crystals of morphine alkaloid, and wash the crystals with morphinated water. Wash the crystals once with a little distilled water to replace the morphinated water. Then place filter paper and contents in the

Erlenmeyer flask and add 20 cc. of $N/10$ sulphuric acid. Break up the filter paper with a glass rod. Heat for about 1 hour, until the filter paper contents are completely dissolved, and then titrate with $N/50$ potassium hydroxide, using methyl red as indicator.

Each cc. of $N/10$ sulphuric acid consumed corresponds to 0.037932 Gm. of morphine sulphate U. S. P. $(C_{17}H_{19}O_3N)_2H_2SO_4.5H_2O$.

HYPODERMIC TABLETS—PHYSOSTIGMINE SULPHATE, HYPODERMIC TABLETS—PHYSOSTIGMINE SALICYLATE.

Hypodermic tablets of physostigmine sulphate shall show a variation (including all tolerances) not greater than 10% either way from the labeled amount, when assayed by the method given below.

Hypodermic tablets of physostigmine salicylate shall show a variation (including all tolerances) not greater than 9% either way from the labeled amount, when assayed by the method given below.

In case of tablets containing $^1/_{20}$ grain of physostigmine sulphate (or physostigmine salicylate) dissolve at least 20 tablets in enough distilled water to make 100 cc. and take an aliquot equal to at least 1 grain of physostigmine sulphate (or physostigmine salicylate).

In case of tablets containing less than $^1/_{20}$ grain of physostigmine sulphate (or physostigmine salicylate) dissolve a sufficient number to represent at least 1 grain of physostigmine sulphate (or physostigmine salicylate) in enough distilled water to make a clear solution.

In either case make the aqueous solution alkaline with sodium bicarbonate, and shake out with several portions of ether, until the aqueous layer is shown to be completely free of alkaloid, using Mayer's reagent for the test. Combine the ether extracts and wash with several portions of distilled water until the ether extracts are free from alkali. Evaporate the major portion of the ether on the steam-bath, finally allowing the remainder to be dissipated at room temperature. Dissolve the residue in a few cc. of neutral alcohol. Add 10 cc. of $N/20$ sulphuric acid, and titrate the excess of acid with $N/50$ potassium hydroxide, using methyl red as indicator. Each cc. of $N/20$ sulphuric acid corresponds to 0.016215 Gm. of physostigmine sulphate $(C_{15}H_{21}O_2N_3)_2$-H_2SO_4 or 0.020667 Gm. of physostigmine salicylate $(C_{15}H_{21}O_2N_3C_7H_6O_3)$.

HYPODERMIC TABLETS—CORROSIVE SUBLIMATE.

Hypodermic tablets of corrosive sublimate shall show a variation (including all tolerances) not greater than 9% either way from the labeled amount, when assayed by either of the methods given below.

In case of tablets containing $^1/_{20}$ grain of corrosive sublimate, or more, dissolve at least 20 tablets in enough distilled water to make 100 cc., and take an aliquot equal to at least 1 grain of corrosive sublimate.

In case of tablets containing less than $^1/_{20}$ grain of corrosive sublimate, dissolve a sufficient number to represent at least 1 grain of corrosive sublimate in enough distilled water to make a clear solution. For determination of the mercury use the electrolytic method described in U. S. P. X, or, as an alternative, the hydrogen sulphide method of the U. S. P. X. The weight of mercury in the electrolytic process multiplied by 1.353 represents the weight of corrosive sublimate.

The weight of the mercuric sulphide obtained in the hydrogen sulphide method multiplied by 1.167 represents the weight of corrosive sublimate.

HYPODERMIC TABLETS—EMETINE HYDROCHLORIDE.

While recognizing that the legal standard for emetine hydrochloride as given in the U. S. P. X permits as much as 19% of moisture on drying, nearly twice as much moisture as is suggested in this recommendation, the Committees offer this method and tolerance as consistent with the best production practices now prevailing, and believe that this action will be a guide for the commercial production of these hypodermic tablets in the future.

In accordance with this plan, hypodermic tablets of emetine hydrochloride shall show a variation (including all tolerances) in content of emetine hydrochloride containing 10% of water not greater than 7.5% either way from the labeled amount, when assayed by the method given below.

Dissolve not less than 20 tablets in enough distilled water to make 100 cc., and take an aliquot equivalent to at least 1 grain of emetine hydrochloride. Make the aqueous solution alka-

line with sodium hydroxide, and shake out with several portions of ether, until the aqueous layer is shown to be completely exhausted of alkaloid, using Mayer's reagent for the test. Combine the ether extracts and wash with several portions of distilled water, until the ether extracts are free from alkali. Evaporate the major portion of the ether on a steam-bath, allowing a small portion of ether to remain to prevent complete dryness. Add a few cc. of neutral alcohol, Add 10 cc. of $N/20$ sulphuric acid and titrate the excess of acid with $N/50$ potassium hydroxide, using methyl red as indicator. Each cc. of $N/20$ sulphuric acid corresponds to 0.015818 Gm. of emetine hydrochloride containing 10% of water ($C_{15}H_{22}O_2N.HCl$ (90%) + H_2O(10%)).

HYPODERMIC TABLETS—ARECOLINE HYDROBROMIDE.

Hypodermic tablets of arecoline hydrobromide shall show a variation (including all tolerances) not greater than 7.5% either way from the labeled amount, when assayed by the method given below.

Dissolve not less than 20 tablets in enough distilled water to make 100 cc. and take an aliquot equivalent to at least 4 grains of arecoline hydrobromide. Add an excess of $N/10$ silver nitrate, 3 cc. of 10% nitric acid, and 3 cc. of ferric ammonium sulphate test solution. Allow to stand about 5 minutes, and titrate the excess of silver nitrate with $N/10$ potassium thiocyanate until a faint brown color persists after shaking. Each cc. of $N/10$ silver nitrate corresponds to 0.02359 Gm. of arecoline hydrobromide.

This report, like the preceding recommendations made to the Bureau, is based upon such information as was at hand and which seemed applicable to the problem. The Committees do not feel, however, that all sources of information have been exhausted. Hypodermic tablet control, viewed in the light of the Committee recommendations, remains an open question as present day experience accumulates. The Committees hold themselves ready to receive information on all of these matters and regard all their recommendations as subject to future review and revision. As occasion arises, they will ask for such changes as experience may show to be advisable.

Respectfully submitted,

Contact Committee of the American Drug Manufacturers' Association,
J. P. SNYDER, *Chairman.*
December 9, 1925.

Contact Committee of the American Pharmaceutical Manufacturers' Association,
R. LINCOLN MCNEIL, *Chairman.*

EXHIBIT SHOWS HOOKWORM CONTROL FOR DOGS, CATS AND MAN.

"Carbon Tetrachloride" is the title of an illustrated, three-section exhibit prepared by the United States Department of Agriculture. Carbon tetrachloride, a well-known chemical, was proposed in 1921 by the Bureau of Animal Industry, of the Department, as a drug for the treatment of hookworm disease and is now in general use the world over for this disease in man and in dogs, cats and foxes. More than 1,500,000 human hookworm cases have been treated with the chemical.

One panel shows a photograph of two brothers, one 21 years old weighing only 66 pounds, a hookworm victim, while his brother who was only 17 years old and not infected with hookworms weighed 126 pounds. Another panel illustrates hookworms and gives information concerning the animals they affect. A third points out that carbon tetrachloride has saved the lives of thousands of dogs, especially of pups and hunting dogs in the South.

The exhibit is 30 inches high and when packed for shipment weighs approximately 75 pounds. A table 2 by 4 feet is suitable for displaying it. The exhibit will be loaned for a period not to exceed 30 days to responsible persons requesting it and agreeing to pay transportation charges. Applications will be filled in the order received and should be addressed to the Bureau of Animal Industry, United States Department of Agriculture, Washington, D. C.

The following has no reference to the foregoing paragraphs. Magazine sections of Sunday papers have recently had pages on the cruelty of "de-barking" dogs. When man's friend is serving for experimental work this operation may be necessary, but, with that exception, we are in agreement with those who register their opposition to the method which deprives a dog of his bark.

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1925–1926.

Office of the Secretary, 10 West Chase St., Baltimore, Md.

LETTER NO. 9.

February 9, 1926.

To the Members of the Council:

52. National Formulary Agency. Motion No. 23 to reconsider the vote on Motion No. 9 (see Council Letter No. 7, p. 140) has been lost receiving four affirmative and ten negative votes. Motion No. 9 (see Council Letter No. 2, p. 1144, Dec.) is therefore declared carried with thirteen votes in the affirmative and two in the negative, and the Committee on Publications is authorized to enter into a contract with the Chemical Catalog Company for the agency to sell the National Formulary V on the basis of the bids submitted.

53. Time and Place of the next Annual Meeting. No motion to reconsider the vote on Motion No. 8 (see Council Letter No. 2, page 1144) has been received since R. P. Fischelis withdrew Motion No. 26 (see Council Letter No. 8, p. 142) and Motion No. 8 is therefore declared carried. The Bellevue-Stratford Hotel of Philadelphia, Pa., is thereby selected as the official Headquarters and the week of September 12th as the time of the 1926 meeting of the A. PH. A. Local Secretary Hunsberger has been so notified.

54. Award of the Contract for Printing the Year Book. Motion No. 27 (see Council Letter No. 8, p. 142) has been carried and the contract for printing the YEAR BOOK to be published in 1926, which is the YEAR BOOK for 1924, is therefore awarded to the Lancaster Press of Lancaster, Pa. on the basis of the bids submitted.

55. Approval of the Merchants and Manufacturers National Bank of Newark, N. J. as a Depository for funds of the A. Ph. A. Motion No. 28 (see Council Letter No. 8, p. 142) has been carried and this depository is approved.

56. Chairman of the Committee on Membership for the State of Pennsylvania. Motion No. 29 (see Council Letter No. 8, p. 142) has been carried and the appointment of I. Paul Griggs is approved. Mr. Griggs has been so notified.

57. Election of Members. Motion No. 30 (see Council Letter No. 8, p. 142) and Motion No. 31 (see Council Letter No. 8, p. 142) have been carried. Applications for membership numbered 57 to 72, inclusive, and applicants for membership numbered H-106 to H-147, inclusive, are therefore declared elected.

58. Campaign Committee, A. Ph. A. Headquarters Building. Dr. H. A. Dunning wishes to announce the appointment of E. G. Eberle and Dr. A. G. DuMez as additional members of this committee in accordance with the authority given him by the Council, to select his associates on the Committee.

59. Election of Officers. The Board of Canvassers—Prof. E. V. Howell, *Chairman;* Prof. J. G. Beard and Prof. E. V. Kyser—report the following result of the ballot: *President,* Theodore J. Bradley; *First Vice-President,* George Judisch; *Second Vice-President,* Arthur G. Hulett; *Members of the Council*—J. H. Beal, C. H. LaWall and W. B. Day.

60. Affiliation with the American Association for the Advancement of Science. A letter has been received from Dr. Burton E. Livingston, *Permanent-Secretary,* advising that their Council ratified the affiliation of the AMERICAN PHARMACEUTICAL ASSOCIATION at the recent Kansas City Meeting. One hundred and seventy members of the A. PH. A. now hold membership in the A. A. A. S. of whom fifty are fellows, and according to a ruling adopted at that meeting, members of affiliated societies, who are not already enrolled, may join without payment of the regular five-dollar entrance fee.

61. Increase in Budget Appropriation for the Drug Trade Bureau of Public Information. The following resolution was adopted at the Des Moines meeting:

> *"Be it Resolved* that the annual contribution to the Drug Trade Bureau of Public Information be continued and that the Council of the Association be requested to increase this contribution within the limits of its available funds, if such increase is required to maintain the operations of the Bureau."

Dr. R. P. Fischelis, *Chairman* of the Co-operative Publicity Committee and the A. PH. A.

representative in the Bureau has submitted a report on the activities of the Bureau, in which it is requested that the appropriation of $200 for 1926 be increased to $400. (See budget, Council Letter No. 7, p. 141.) The report and the request have been submitted to the Committee on Finance, and Chairman Koch writes that the motion to increase this appropriation has the unanimous approval of the committee.

(*Motion 32.*) *It is moved by Fischelis that the appropriation of $200 in the Budget for 1926 for the Drug Trade Bureau of Public Information be increased to $400.*

62. Completion of the Audit. W. A. Johnston & Co. submitted a report dated February 4, 1926, approving the annual report of the treasurer for the calendar year ending December 31, 1926. This annual report will be printed in the YEAR BOOK.

63. Transfer of the Treasurership. All securities and bank balances as shown by the approved annual report, with the exception of those belonging to the Headquarters Building Fund, were transferred to Treasurer C. W. Holton on February 5, 1926, by former Treasurer E. F. Kelly. After consultation with Dr. Dunning, Chairman of the Headquarters Building Campaign Committee and Mr. Bortner, the Business Manager, it was decided to leave the Headquarters Building Fund in the charge of E. F. Kelly, as Treasurer of the Campaign Committee, subject to withdrawal only on the signature of C. W. Holton and E. F. Kelly. Treasurer Holton has transferred the checking account of the Current Fund to the Merchants and Manufacturers National Bank, Newark, N. J., and will carry all other bank accounts in the Baltimore Trust Company and in the Boston Penny Savings Bank; the securities in his charge are in a safe deposit box, in the Baltimore Trust Company, carried in his name as Treasurer. The Headquarters Building Fund will be carried, as heretofore, in the Baltimore Trust Company and in the Drovers and Mechanics National Bank of Baltimore. The securities belonging to this fund are in a safe deposit box in the Baltimore Trust Company, carried in the name of E. F. Kelly, Secretary.

An account has been opened in the Baltimore Trust Company, in the name of the AMERICAN PHARMACEUTICAL ASSOCIATION, E. F. Kelly, Secretary, in which will be deposited collections from dues, the JOURNAL, the National Formulary, etc., for transmittal to Treasurer Holton, who will receive duplicate deposit slips. A bond for $15,000 on C. W. Holton as Treasurer by the Fidelity and Deposit Company of Baltimore is in the charge of Secretary Kelly and a bond for $5000 on E. F. Kelly as Secretary, by the same company, is in the charge of Treasurer Holton.

The bond for $15,000 on E. F. Kelly, as Treasurer, was cancelled on February 5, 1926, the date of the transfer of the securities and bank balances to C. W. Holton.

64. Safe Deposit Boxes. The Baltimore Trust Company has requested Secretary Kelly and Treasurer Holton to file properly executed certificates giving them the right of access to and control over the contents of Boxes No. 869 and No. 2, respectively. A copy of the certificate is given in Council Letter No. 9, 1921–1922, on page 219 of the JOURNAL for March 1922—and is to be signed by the President and Secretary of the ASSOCIATION.

(*Motion 33.*) *It is moved by Eberle that E. F. Kelly as Secretary shall have access to and control over the contents of Box 869 and that C. W. Holton as Treasurer shall have access to and control over the contents of Box No. 2, both in the safe deposit vault of the Baltimore Trust Company, and that certificates for this purpose be executed by the President and Secretary of the Association.*

65. Sale of the N. F. IV. The Secretary has been in correspondence with the Midland Publishing Company with the object of disposing of the stock of the N. F. IV now on hand, as far as possible. Since the N. F. V will not become official before July 1, 1926, the Spring examinations by the Schools of Pharmacy and Boards of Pharmacy will be based on the N. F. IV. A notice to this effect has been sent to the Pharmaceutical Press, and the Midland Publishing Company will promptly circularize the schools and their other customers.

E. F. KELLY,
Secretary of the Council.

LETTER NO. 10.

March 12, 1926.

To the Members of the Council:

66. Increase in Budget Appropriation for the Drug Trade Board of Public Information. Motion No. 32 (see Council Letter No. 9, this issue of the JOURNAL) has been carried and the Bureau has been informed of the increase in the appropriation.

67. Safe Deposit Boxes. Motion No. 33 (see Council Letter No. 9, this issue of the JOURNAL) has been carried and the certificates as authorized have been filed with the Baltimore Trust Company.

68. Use of the Text of the N. F. V. The following letter has been received from Chairman DuMez of the Committee on Publications:

"A request has been received from Prof. Wm. Mansfield to use portions of the N. F. V for partial reproduction in a forthcoming edition of Mansfield's Materia Medica and Pharmacognosy. The Committee on Publication has approved this request and I, therefore, move that Prof. Mansfield be given permission to use the text of the N. F. V for partial reproduction, at the customary fee of $5.00."

(*Motion 34.*) *It is moved by Dr. DuMez that Prof. Wm. Mansfield be granted permission to use the text of the National Formulary V for partial reproduction at the customary fee of $5.00.*

69. Completion of the National Formulary V. From information obtained from Chairman Scoville and from the Mack Printing Company (formerly the Eschenbach Printing Company) it seems that the first 2000 copies of Series A of the N. F. V will be ready for distribution between April 10 and April 17, 1926. The remaining 18,000 copies of Series A can follow very closely and arrangements are being made to have copies of the first 2000 read for possible corrections so that there will be no delay. Contracts covering the agency and sale of the N. F. V as per the specifications submitted and their proposal, have been signed by the Chemical Catalog Company and they have their advertising campaign arranged for.

It is now necessary to promptly set the date on which the National Formulary V shall become official. The impression has been gained that it will become official on July 1, 1926 and a statement to this effect has appeared in some of the pharmaceutical journals. Although the time intervening is less than would ordinarily be allowed, the appearance of the N. F. V has been given such publicity that it is believed best to set the official date on July 1, 1926.

(*Motion 35.*) *It is moved by DuMez, seconded by Hilton, that the National Formulary V become official on July 1, 1926.*

70. Life Members. The following have become Life Members of the ASSOCIATION in accordance with Article IV of Chapter IX of the By-Laws:

Albert DeLorenzi, Dallas, Texas; Lewis Flemer, Washington, D. C.; J. Fuller Frames, Baltimore, Md.; Josiah Kirby Lilly, Indianapolis, Ind.; William Mittelbach, Booneville, Mo.; Louis Carl Staudt, Aurora, Ill.; James Walling Westcott, Baltimore, Md.; James Prior Wood, New Haven, Conn., and Life Membership certificates will be sent them.

71. Applicants for Membership. The following applications properly endorsed and accompanied by the first year's dues have been received:

No. 73, J. Walter Aderholt, P. O. Box 325, Putnam, Texas; No. 74, Robert O. Baird, Box 653, Bismarck, N. Dak.; No. 75, William Benjamin Behrens, 1506 E. 73d St., Chicago, Ill.; No. 76, Margit Leanora Blanchard, 4311 Brooklyn Ave., Seattle, Wash.; No. 77, Alton C. Browning, Chapel Hill, N. C.; No. 78, Lloyd M. Chew, 200 Washington St., Gainesville, Fla.; No. 79, Leona Jeannette Danley, West Alexander, Pa.; No. 80, Conda H. Diehl, 3703 Chestnut St., Philadelphia, Pa.; No. 81, Charles R. Edwards, Chapel Hill, N. C.; No. 82, Benjamin L. Eicher, 406 N. Hermitage Ave., Chicago, Ill.; No. 83, George W. Fehr, 1500 S. Broad St., Philadelphia, Pa.; No. 84, W. L. Franklin, 136—4th Ave. No., Nashville, Tenn.; No. 85, Richard Frohwein, 122 First St., Elizabeth, N. J.; No. 86, John Adolphus Gardner, Bay Street Pharmacy, Daytona, Fla.; No. 87, Ena McGraw, 3944 University Way, Seattle, Wash.; No. 88, Anna Louise Hanaway, 472 North St., Meadville, Pa.; No. 89, Wilford Harrison, Box 1021, Wichita Falls, Texas; No. 90, Chas. J. James, Chapel Hill, N. C.; No. 91, Harriet Clara James, 102—21st Ave. No., Seattle, Wash.; No. 92, Conrad E. Langfield, Northville, Mich.; No. 93, Florence May Logg, 5002—20th Ave., N. E., Seattle, Wash.; No. 94, Homer D. Long, 1104 So. Wabash St., Chicago, Ill.; No. 95, Alexander G. Keller, 161 N. Second St., Philadelphia, Pa.; No. 96, Aleda Laura Martins, 3622—35th Ave., W., Seattle, Wash.; No. 97, Ellen Mae Lundquist, 3538 Burke Ave., Seattle, Wash.; No. 98, Harold E. G. Tapert, 840—East 56th St., Seattle, Wash.; No. 99, William Randolph McCreary, 1043 Reece Ave., Bryn Mawr, Pa.; No. 100, Paul L. McDaniel, Chapel Hill, N. C.; No. 101, J. Webster Merritt, 857 Michigan Ave., Gainesville, Fla.; No. 102, C. A. Mitchell, 1255 Wellington Ave., Chicago, Ill.; No. 103, Semion S. Nelson, 20 Magnolia St., Hartford,

Conn.; No. 104, Doak Norwood, 190 North State St., Chicago, Ill.; No. 105, Ernest Kingdom Rains, 6238 Kimbark Ave., Chicago, Ill.; No. 106, Clifton A. Ring, Chapel Hill, N. C.; No. 107, James Leo Ryan, 1720 Main St., St. Joseph, Mo.; No. 108, Samson Goodglick, 2820 Mt. St. Helens Pl., Seattle, Wash.; No. 109, Myra Scheyer, 2206—12th St., No., Seattle, Wash.; No. 110, Jacob Shapiro, 3728 Ellis Ave., Chicago, Ill.; No. 111, Harold Adam Shoemaker, Univ. of Oklahoma, Norman, Okla.; No. 112, Walter Dennis Strother, 1400 Maple St., Columbia, S. Car.; No. 113, Harry Swain, 1427 E. Susquehanna Ave., Philadelphia, Pa.; No. 114, Owen C. Sweeney, 6050 Eberhart Ave., Chicago, Ill.; No. 115, Dr. Dirk van Os, Groote Rozenstraat 15, Groningen, Holland; No. 116, John E. Welch, Jr., Chapel Hill, N. C.

(*Motion 36.*) *Vote on applications for active membership in the American Pharmaceutical Association.*

72. Applicants for Membership on Account of Contributions to the Headquarters Building Fund. The following non-members of the A. PH. A. have pledged $25.00 or more to the Headquarters' Building Fund and have made a cash payment of $5.00 or more. They are entitled to membership.

H-148, Ralph J. Allen, 1124 Pierce St., Sioux City, Iowa; H-149, Lewis Albert Babb, 1730 Beacon St., Brookline, Mass.; H-150, Lawrence Alfred Baccari, 34 Cook St., Newton, Mass.; H-151, Edmund Burke Barnard, 4556 Ravenswood Ave., Chicago, Ill.; H-152, Arthur LeRoy Barry, 500 E. 18th St., Minneapolis, Minn.; H-153, Raymond J. Baumhofer, Jordan, Minn.; H-154, Harry Berlin, 2410—3rd Ave., N., Birmingham, Ala.; H-155, David Eugene Bigelow, Seiler Bldg., Jamestown, N. Dak.; H-156, Herbert I. Bluestone, 1034 Sixth Ave., New York, N. Y.; H-157, Carl Frank Bokmeyer, Sheffield, Iowa; H-158, Roy C. Bower, Ball Building, Sanford, Fla.; H-159, Donald Cameron Bransby, 1169—36th Place, Los Angeles, California; H-160, Clarence Bryant Brooker, Ankey, Iowa; H-161, David Burde, 2608 Creston Ave., Bronx, New York; H-162, Charles Louis Caron, 2000—4th Ave., So., Minneapolis, Minn.; H-163, John Dumont Case, 37 W. Main St., Somerville, N. J.; H-164, William E. Clayton, 213 W. 3rd St., Grand Island, Nebr.; H-165, George M. Cook, Lucas, Kan.; H-166, Glenn M. Cook, 61 Broadway, Fargo, N. Dak.; H-167, Claude C. Cowden, 6 Kron St., Evansville, Minn.; H-168, Samuel Dincin, 50 W. Palisade Ave., Englewood, N. J.; H-169, William Benjamin Freeman, 5300 Blackstone Ave., Chicago, Ill.; H-170, R. H. Gericke, 116 No. Cedar St., Owatonna, Minn.; H-171, John H. Gilman, 70 W. 40th St., New York, N. Y.; H-172, Mrs. John G. Godding, 611 Centre St., Newton, Mass.; H-173, Bernard Golding, 4301—10th Ave., Brooklyn, N. Y.; H-174, Elwin B. Greaves, Glencoe, Minn.; H-175, A. G. H. Hahn, 214 W. Saratoga St., Baltimore, Md.; H-176, Francis R. Hammarsten, Grey Eagle, Minn.; H-177, Thomas Alexander Harkness, 337 N. Higgins Ave., Missoula, Mont.; H-178, Morris Herstein, 367 So. 3rd St., Brooklyn, N. Y.; H-179, A. Wray H. Hilts, 1886 River Rd., LaSalle, N. Y.; H-180, Joseph Louis Hrdina, 2508 S. 56th Court, Cicero, Ill.; H-181, Edwin C. Hutman, 43 Eagle St., Albany, N. Y.; H-182, Fred T. Jones, 2703 Mont. Ave., Billings, Mont.; H-183, William Kaiser, 887 Longwood Ave., New York, N. Y.; H-184, Abraham Kashdan, 6823 Ft. Hamilton Pkway., Brooklyn, N. Y.; H-185, Sarkis Kazarian, 264 Jefferson St., Hartford, Conn.; H-186, Frederick Kettler, 608 Downes Ave., Milwaukee, Wis.; H-187, Albert J. Kettering, 1381 E. 55th St., Chicago, Ill.; H-188, Aron Kogon, 3863 Lincoln Ave., Chicago, Ill.; H-189, Naum Kaplan, 238 Metropolitan Ave., Brooklyn, N. Y.; H-190, Harry A. Krane, 3759—4th Ave., S., Minneapolis, Minn.; H-191, Casper Lawrence Kremer, 3512 E. Baltimore St., Baltimore, Md.; H-192, Thomas M. Lepard, 512 W. 207th St., New York, N. Y.; H-193, Meyer Simon Levy, 400 Sutter Ave., Brooklyn, N. Y.; H-194, Claudio Fonte Licourt, 522 Richmond St., Cincinnati, Ohio; H-195, Dan Ray Long, 1950 Parsons Ave., Columbus, Ohio; H-196, Wm. F. Loppnow, 92 Chambers St., Milwaukee, Wis.; H-197, Frederick Lyne, 93 So. 1st St., San José, Cal.; H-198, Anthony M. Maggio, 146 Wilson Ave., Brooklyn, N. Y.; H-199, A. L. Malmo, 309 Fidelity Bldg., Duluth, Minn.; H-200, Henry S. Mayer, 19 W. Main St., Marshalltown, Iowa; H-201, Todd McCluggage, Valley Center, Kans.; H-202, Dufferin McConnell, 1102 Morton Ave., Chester, Pa.; H-203, Thos. Harry McKew, Jr., 1820 E. North Ave., Baltimore, Md.; H-204, Arthur A. Meckstroth, 401 Nicollet Ave., Minneapolis, Minn.; H-205, Ladislaus A. Misiova, 2332 W. Cullerton St., Chicago, Ill.; H-206, Generoso Frank Pagliuca, 1 Revere Pl., Boston, Mass.; H-207, Geo. Wesley Perkins, Union Ave., Delanco, N. J.; H-208, Paul

Eugene Plunkett, 2043 Edmondson Ave., Baltimore, Md.; H-209, Carson H. Porter, 325 Camlin Ave., Rockford, Ill.; H-210, Carl H. Oertel, 1801 E. Eager St., Baltimore, Md.; H-211, Joseph Michael Rabatin, 189 Kent St., Brooklyn, N. Y.; H-212, Melvin E. Rasdal, Ogallala, Neb.; H-213, Solomon Reznek, 201—15th St., N. E., Washington, D. C.; H-214, Isadore Edward Rosokoff, 135 Minerva St., Tonawanda, N. Y.; H-215, Elijah Mitry Saleeby, 123 West Santa Clara St., San José, Cal.; H-216, Glyndon Asa Sawin, 71 Francis St., Brookline, Mass.; H-217, George W. Sayles, 3158 Irving Park Blvd., Chicago, Ill.; H-218, John Gidion Searle, 4737 Ravenswood Ave., Chicago, Ill.; H-219, Chas. Scherer Andrew, 421 St. James Pl., Chicago, Ill.; H-220, Edwin Albert Schmidt, 1501 S. Hanover St., Baltimore, Md.; H-221, Henry Schmidt, 1501 Hanover St., Baltimore, Md.; H-222, Abraham Settel, 179 Jamaica Ave., Jamaica, L. I.; H-223, Clarence H. Scholes, Bradford, Ill.; H-224, Christopher Francis Shutts, 64 Boston Post Road, Larchmont, N. Y.; H-225, Max E. Simon, 591 Prospect Ave., New York, N. Y.; H-226, Oscar B. Siurseth, Larimore, N. Dak.; H-227, Edwin John Storms, 436 Second Ave., S., Minneapolis, Minn.; H-228, George F. Swartz, Mobridge, N. Dak.; H-229, Louis Turan, 406—7th Ave., Brooklyn, N. Y.; H-230, Morris E. Vaslow, 1401 E. Marquette Rd., Chicago, Ill.; H-231, J. A. Watkins, c/o Crystal Drug Co., Huntsville, Ala.; H-232, D. William Weinstein, 901 Hunts Point Ave., New York, N. Y.; H-233, Joseph White, 183 Quincy St., Roxbury, Mass.; H-234, George Earl Wilkerson, 757 McHenry St., Baltimore, Md.; H-235, George Arthur Zarobsky, 5029 West 22nd Place, Cicero, Ill.; H-236, Henry Zuppello, 54 Union St., Brooklyn, N. Y.; H-237, Elmore H. Wecker, c/o South Side Drug Co., Dickinson, N. Dak.; H-238, C. A. Ringdahl, Brandon, Minn.; H-239, E. Schoenholzer, 23 No. 27th St., Billings, Mont.

(*Motion 37.*) *Vote on applications of Contributions to the Headquarters Building Fund for Membership in the American Pharmaceutical Association.*

E. F. KELLY,
Secretary of the Council.

DRUG LAWS SUPPLEMENT.

We are indebted to the Proprietary Association for a copy of the *Supplement* to the 1924 compilation of Federal and State laws relating to the manufacture and sale of foods, drugs and insecticides, which has been published by the Standard Remedies Publishing Company, Washington. Stickers are furnished for insertion in the 1924 compilation, referring to amendments printed in the *Supplement.*

"UNIVERSITIES HAVE BEEN TURNED INTO INTELLECTUAL CAFETERIAS."

Dr. Glenn Frank, President of the University of Wisconsin, does not endorse the elective system in universities; he states that system has been "a retreat from new knowledge and has turned universities into intellectual department stores or specialty shops or intellectual cafeterias." It has led to "the obvious scrappiness of culture," with the result that "intense specialization is 90 per cent inevitable in the modern world," and he concludes with a prophecy of danger. "I can imagine," he says, "generation after generation turning out scientific workers with narrower and narrower outlook, incapable of conceiving those broad flights of the imagination which have made possible every epochal advance in science.

"Teaching is now formal but learning is informal. No one learns much but in an informal way. It is a question, however, whether you could ever institutionalize informality."

PHILADELPHIA DRUG EXCHANGE ADOPTS SCHEDULE OF HOLIDAYS.

In order to secure greater uniformity in the observance of legal holidays, the members of the board of directors of the Philadelphia Drug Exchange, March 10, adopted the following schedule of legal holidays and suggested its use by the members of the Exchange:

New Year's Day, January 1—Closed all day.
Lincoln's Birthday, February 12—Open all day.
Washington's Birthday, February 22—Closed.
Good Friday—Closed all day.
Memorial Day, May 30—Closed all day.
Independence Day, July 4—Closed all day.
Labor Day, September, firs tMonday—Closed.
Columbus Day, October 12—Open all day.
Election Day, November—Open all day.
Armistice Day, November 11—Open all day.
Thanksgiving Day, November—Closed all day.
Christmas Day, December 25—Closed all day.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

Article IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

UNIVERSITY OF NORTH CAROLINA.

The twenty-seventh meeting of the University of North Carolina Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held in Pharmacy Hall, Thursday evening, February 4, 1926. Dr. P. M. Giesy, chief of the research division of E. R. Squibb and Sons, the speaker of the evening, was introduced by Dr. J. M. Bell, head of the department of chemistry.

In a historical sketch Dr. Giesy gave a complete résumé of the research work which had been done on vitamins. Beginning with the early work of Chamberlain and Vedder and Funk and Suzuki, he related the progress which had been made in this field up to the present time.

He spoke interestingly on the location of vitamins in various food-stuffs and particularly of the fat soluble vitamins A and D which cod-liver oil supplies so abundantly. He gave an account of the methods used in insuring a cod-liver oil which was more palatable and high in vitamin content. He also discussed the use of cod-liver oil as a valuable adjunct to the diet of poultry and its use by breeders of foxes for their pelts.

The lecture was profusely illustrated by charts, photographs and graphs, and was thoroughly enjoyed by the members of the local branch.

A vote of thanks was given Dr. Giesy.

PHILADELPHIA.

The March meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held Friday, March 5, 1926, at the P. A. R. D. building; President Smith presided.

The minutes of the February meeting were read and approved. The application to the parent body, of Wm. Randolph McCreary, 1043 Reece St., Bryn Mawr, Pa., was read and the applicant was accepted as a branch member, subject to approval by the parent body.

A report of the Auditing Committee, stating that the Treasurer's books had been audited and found to be correct, was accepted.

Mr. McNeary reported progress on the work of the special membership campaign committee and presented four applications for branch membership as follows:

Harry Seidman, G. H. Lennox, W. H. Ricker and F. R. Keller.

The report and the four applications were accepted.

The President then introduced Robert P. Fischelis, long a member and active worker of the Branch, who was our guest and speaker for the evening. Dr. Fischelis presented a splendid paper on the work being done by the Drug Trade Bureau of Public Information, of which he is chairman, and he had the walls covered with copies of hundreds of newspaper articles collected from all parts of the country.

Dr. Fischelis gave a résumé of the progress of the bureau during its five years of existence, telling of its early struggles and how it finally began to function.

The bureau was organized about five years ago and supported at first by eight leading national drug trade organizations, later by only six. The bureau functions through the newspapers of the country, developing and influencing public opinion by publishing articles of pharmaceutical interest.

During the past year fifty bulletins were sent out from the chairman's office and this "copy" was printed in hundreds of newspapers

throughout the country. Practically every article printed, including many editorials, were all for the good and welfare of pharmacy, only a few being of questionable or detrimental character. Dr. Fischelis had the walls lined with "evidence" in the form of clippings from papers throughout the country, and it was interesting to see the results of this work. The work of this bureau is of vital importance to pharmacy as we all know that public opinion can easily be moulded by paper propaganda and it certainly is time for pharmacy to make itself known and more fully appreciated.

Dr. Fischelis pointed out the great opportunity for state and local associations to do their own local work of this type and urged that this be considered wherever possible.

At the close of the address there was prolonged applause and considerable discussion followed. A rising vote of thanks was given for this most enlightening presentation.

A motion was passed that the Secretary write to the parent organization heartily endorsing this work and urging the parent body to continue with its full support to the bureau.

J. W. E. Harrisson then reported for the Nominating Committee as follows:

President, Wm. L. Cliffe.
First Vice-President, Raymond Hendrickson.
Second Vice-President, Quintus Hoch.
Secretary-Treasurer, Adley B. Nichols.
Council Representative, Ambrose Hunsberger.

The report was accepted, and as there were no further nominations the President asked Mr. Harrisson to cast a unanimous ballot for the nominees.

In the absence of Mr. Cliffe the chair was turned over to Mr. Hendrickson who in turn called the other newly-elected officers to the platform.

A rising vote of thanks was tendered to Mortimer Smith, the retiring president, for the splendid work he had carried on during the past year.

The usual dinner was held at the Longacre Hotel preceding the meeting.

ADLEY B. NICHOLS, *Secretary*.

UNIVERSITY OF WASHINGTON.

The February meeting was held Thursday evening, February 26, at Bagley Hall. The preliminary business meeting was dispensed with and the chairman introduced Mr. H. V. Williamson, inspector in charge of the narcotic division, as the speaker of the evening. Mr. Williamson divided his talk into two parts; first dealing with the Narcotic Act as a revenue measure, and secondly relating some experiences in connection with the enforcement of the act. The members, consisting of pharmacy students and druggists, were favored with a clear and concise explanation of the rules applying to the druggist in conducting his business under the act, and of the simple technical errors one is likely to introduce unless the rules are well understood. As a retailer Mr. Williamson said, "Never sell narcotics (except in one ounce aqueous solution) on an official blank. Never sell original packages on a prescription without first destroying the revenue stamp on the package, and then see that the package is properly labeled as a narcotic prescription." This rule appears simple, and any deviation from this rule comes under "don't" for the retailer.

The second part of the talk, though of lesser immediate value, was of popular interest. The display of confiscated equipment used by narcotic addicts was of a great variety. Opium pipes, handsomely carved, to those made from door knobs and gas tubing, were shown. Homemade "hypo" needles and hypo compacts, and other accessories, each presented with an interesting anecdote, followed in order. Kewpie dolls and post cards contributed their share as vehicles for the narcotic distributors. The talk was concluded with the aid of a large number of lantern slides, showing facial characteristics of the effects of the several kinds of narcotics used and of views of dens and other quarters of those either participating in the use of or the distribution of narcotics. A hearty vote of thanks was extended to Mr. Williamson for his talk. The meeting adjourned after which a closer view of the "display" was participated in. This led to questions on the part of the observers, and replies by Mr. Williamson or by his two agents who accompanied him resulted in an hour of post meeting.

H. A. LANGENHAN, *Secretary*.

The New York Branch, AMERICAN PHARMACEUTICAL ASSOCIATION, at its February meeting held a symposium on retail salesmanship. Turner F. Currens discussed the subject in a comprehensive paper, and short talks were made by others, as follows:

"How to Sell Sick-Room Supplies," by Mrs. May O'C. Davis; "How to Increase the Prescription Business," J. Leon Lascoff; "How to Advertise First-Aid Week," Herman

Walter and "What Is the Principal Cause of Price Cutting?" Robert S. Lehmann.

At a recent meeting of Pittsburgh Branch, A. PH. A., Prof. Louis Saalbach gave a comprehensive review of U. S. P. X, comparing that edition with its predecessor. He prefers the inclusion of molecular weights in the individual monographs, and comments on the addition of new chemical compounds. The paper gives brief consideration to most of the changes and additions in an instructive way. He also discusses the designations of titles of some of the preparations, as for example Cinchona, the preparations of which may differ in appearance, because both red and yellow cinchona are permissible, if they comply with the standard of strength. The title of Compound Cathartic Pills was changed so as not to indicate the action or purpose, but the title of Smallpox Vaccine evidently does not follow the same lines of reasoning. As indicated the paper presents quite a complete summary of changes, etc., with which the pharmacist must become acquainted.

CORRESPONDENCE

ABSTRACTS FROM LETTERS OF LIFE MEMBERS, A. PH. A.

J. F. Geisler.—"I beg to acknowledge the receipt of Certificate of my election to Life Membership in the AMERICAN PHARMACEUTICAL ASSOCIATION, and hope that I may be of use in furthering the interests and purposes of the ASSOCIATION for many years to come. It is interesting to look over the work of the ASSOCIATION of the past seventy-five years and note the self-sacrifice of many of the old members and the good work they did in the interest of science and Pharmacy in particular."

William C. Kirk.—"I regret that in the past I could not have been of as great a service to the ASSOCIATION as the latter has been to me."

S. Nevin.—"I shall always feel proud of the ownership of the certificate, and am going to hang it in a prominent place in my office."

Carl Weeks.—"Membership certificate has been received. It will be framed and hung in a position of honor."

C. Mahlon Kline.—"I have received the certificate of life membership in the AMERICAN PHARMACEUTICAL ASSOCIATION which I am having framed and which will decorate my office. I have always held the AMERICAN PHARMACEUTICAL ASSOCIATION in the highest regard and it gives me a feeling of great satisfaction to know that I am to be a member of the ASSOCIATION for the rest of my life."

John Thomas Moore.—"While records may show that I have taken little active part in annual meetings as evidenced by attendance, I wish to say that absences were due to uncontrollable circumstances.

"I welcome the receipt of the JOURNAL every month. The YEAR BOOKS are more or less in daily use. While I am physically debarred from active work, I am more than glad to mentally appreciate the progress that accompanies and elevates the Science and Art of Pharmacy as shown and recorded in the ASSOCIATION'S literature.

"I put the certificate of acknowledged years of fraternity by the side of the original certificate showing membership. The certificate notification was in the nature of an accolade, for which I think it only right to express gratitude. I hope that I may enjoy many years of the promising future of the ASSOCIATION in common with those of regular sustaining membership."

Charles G. Merrell.—"I have been a member of this ASSOCIATION for a good many years and have appreciated the work that has been done, and hope that with the activities that are now taking place, the A. PH. A. may fully come into its own and occupy even a more prominent place in pharmacy than it has in the past."

H. H. Rusby.—"The reflections that the certificate suggests are very gratifying, in spite of the many unpleasant incidents that are brought to mind. *Per opera ad astra* was the motto of my class, and the principle rings more truly as I near the end than at any previous time. It is a great joy to realize that I have done my bit in developing this great ASSOCIATION. The best part of it is to see the large army of young people who seem to inherit the worthy spirit that actuated their predecessors. We should overlook rash, impulsive and injudicious acts, in view of a sound basis."

EDITORIAL NOTES

Editor: E. G. EBERLE, 10 West Chase St., Baltimore, Md.

Members of the Council, A. PH. A.: S. L. HILTON, *Chairman;* W. C. ANDERSON, *Vice-Chairman;* E. F. KELLY, *Secretary;* JAMES H. BEAL, CHARLES H. LAWALL, HENRY M. WHELPLEY, H. V. ARNY, A. G. DUMEZ, H. C. CHRISTENSEN, JULIUS A. KOCH, ROBERT P. FISCHELIS. *Ex-Officio;* L. L. WALTON, President; Vice-Presidents, W. C. ANDERSON, CLYDE L. EDDY; E. F. KELLY, Secretary; C. W. HOLTON, Treasurer; WILLIAM D. JONES, Chairman of the House of Delegates. Editors of the JOURNAL and YEAR BOOK: E. G. EBERLE and A. G. DUMEZ. Committee on Publications: A. G. DUMEZ, *Chairman;* R. P. FISCHELIS, H. V. ARNY, H. M. WHELPLEY, E. F. KELLY, C. W. HOLTON, E. G. EBERLE.

Collaborators: The Members of the Council; the Editor of the YEAR BOOK, A. G. DUMEZ; E. FULLERTON COOK; Chairman, U. S. P. Revision Committee; W. L. SCOVILLE, Chairman, N. F. Revision Committee; the Chairmen of the Sections, A. PH. A.: F. F. BERG, J. G. BEARD, H. C. NEWTON, AMBROSE HUNSBERGER, L. K. DARBAKER; WILLIAM D. JONES, Chairman of the House of Delegates, A. PH. A.; EDWARD H. KRAUS, President, A. A. C. P.; CHARLES B. JORDAN, Chairman Executive Committee, A. A. C. P.; M. N. FORD, President, N. A. B. P.; HENRY C. CHRISTENSEN, Secretary, N. A. B. P.

H. A. B. DUNNING, REMINGTON MEDALIST FOR 1926.

H. A. B. Dunning, chairman of the A. PH. A. Headquarters-Campaign Committee, has been named as the Remington Medalist for 1926. The results accomplished by Chairman Dunning in directing the securing of funds for the Headquarters is an outstanding work in American Pharmacy. The possibilities of success were questioned when the plan first was presented, now his promise has become a reality.

DR. H. A. B. DUNNING.

What this endeavor has meant to the Chairman no one, except he himself, knows. The campaign was directed during the hours taken from rest and business affairs, for other promotions have also required his time. The medal will be formally awarded this month under the auspices of New York Branch of the A. PH. A., the founders of the memorial. Further reference will be made to the recipient of the honor in the succeeding issue of the JOURNAL.

SEPTEMBER WILL BE PHARMACY MONTH.

Pharmacists should bear in mind the national pharmaceutical conventions of September, in Philadelphia. The AMERICAN PHARMACEUTICAL ASSOCIATION, the American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy will meet during the week of September 13. During the following week the National Association of Retail Druggists will hold its annual sessions. The Conference of Pharmaceutical Research also will convene in Philadelphia; the time has not been selected at this writing. *Reservations should be made as promptly as possible at the hotels.*

EDUCATIONAL AND SERVICE FEATURES OF A MUSEUM AND LIBRARY FOR PHARMACY.

In addressing the Baltimore Retail Druggists' Association at the recent annual dinner at Hotel Rennert, E. G. Eberle spoke in part as follows:

"The museum not only will become an historical depository and exhibit room but a real service. It will speak perhaps better than words can of the development of our Materia Medica, its sources, production, distribution, standardization, etc.

"I have said editorially that pharmaceutical education is incomplete unless it comprehends a general familiarity with the important diverse fields of human thought and also is linked with the history of the profession and those who pursued it, without the vision that enables one to view the past; with only the concentrated gaze on the present-day conditions, we lack perspective, we are out of sympathy with the spirit of the history of progress and unappreciative of the common interests of related activities and those we serve; we cannot realize the more serious duties involved in our work, nor have a full understanding of the current of advance that sweeps beyond the sphere of proximate things. An analysis is not complete if the preliminary determinations are not considered with final results; so also the purposes of pharmacy are better understood if we have a general knowledge of its development.

"In my opinion the Museum of the Headquarters like all other endeavors of the ASSOCIATION will be a service department, rather than only a show place, and the Library will follow related lines and will represent not only a collection of books, but books for the purpose of rendering service not only to the research workers, the schools, the faculty members, the laboratorians, the historians, etc., but directly or indirectly to the manufacturers, wholesalers and retailers. As stated, I am expressing my opinion and not officially, it is for the purpose of developing thought along the lines, for the day is drawing nearer when thoughts will be shaped into realities. So then, in my opinion, the Library will become an activity as well as a repository; contributions of individuals and of libraries will add to the storehouse of knowledge on pharmacy and related subjects to be of service. The work of other libraries not only will be supplemented but drawn upon for information to serve others. Books will be collected for others, for even now requests come to the JOURNAL office for information as to how a volume to complete a series or file may be obtained. Copies can be made by photostat, references can be searched for and thus the work of the compiler, statistician, historian, student, teacher, publication, librarian, retailer, wholesaler and manufacturer aided. It is an easy matter to speak of these things—it is a very much greater task to shape them into realities, but in due time the possibilities and opportunities here presented in words will, in so far as they are worth while, come into action and you will have contributed to a great service from which you will derive even greater benefits. There will come men and women who will see the worthwhileness of many things that their money can give, and enjoy, while living, the results of their disinterestedness and liberal-mindedness; some will make bequests so that they, too, may be remembered for their good deeds. Others will realize that any endowment for the headquarters will free the Association from disconcerting hindrances and shape other opportunities for pharmacy and those served thereby."

BULLETINS OF THE DRUG TRADE BUREAU OF PUBLIC INFORMATION.

Director Robert P. Fischelis has issued Bulletins D-7 to D-16, of the Drug Trade Bureau of Public Information.

Bulletin D-7 comments on the Census of Wholesale Drug Salesmen as a means of distribution by the wholesalers to the retailers. This report, which has been compiled by the former Secretary C. H. Waterbury of the N. W. D. A., states that there are employed by the members of the National Wholesale Druggists' Association, 3301 wholesale salesmen of all kinds, or an average of one salesman for each 15.8 retail drug stores of the United States. The traveling force is represented by 2610 salesmen. The booklet in which the report is made contains a map showing the distribution of wholesale drug houses, a list of the members of the National Wholesale Druggists' Association, the number of salesmen they emlpoy, and the states or territory covered by them.

Bulletin D-8 gives an account of the activities of Dr. E. L. Newcomb who has been elected secretary of the National Wholesale Druggists' Association. A brief sketch will be found in the January number, page 65. As is well known, Dr. Newcomb is Publicity Director of the Headquarters Committee, and his work has largely contributed to the success of the undertaking.

Bulletin D-9 refers to "First Aid Week" in which all retail pharmacists have been interested during the week of March 14.

Bulletin D-10 relates to the supplement published by Standard Remedies Publishing

Co., Inc., at Washington. The supplement records legislation passed at the 1924–25 sessions of State Legislatures and covers amendments to laws printed in the January 1924 edition of "Federal and State Laws;" also laws relating to foods, drugs, insecticides, etc., and those covering advertising. A feature of the supplementary volume is a list of the states with information as to when their Legislatures meet and the approximate length of sessions.

Bulletin D-11 comments on the address of Dr. H. V. Arny delivered at the Minnesota Pharmaceutical Association meeting, printed in the March number of the JOURNAL, p. 213.

Bulletin D-12 relates to the Northwestern Drug Show held in Des Moines during the meeting of the Iowa Pharmaceutical Association.

Bulletin D-13 comments on the warnings issued by Secretary H. C. Christensen, of the N. A. B. P., against employment of unregistered help in pharmacies, printed in the January JOUR. A. PH. A., p. 55.

Bulletin D-14 announces the election of officers of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Bulletin D-15 relates to a statement by Dr. Robert P. Fischelis in which he says that the discovery of novocaine as a substitute for cocaine is a triumph of research which should stir fresh effort in the nation's colleges of pharmacy. The bulletin further comments on research in plant chemistry.

Bulletin D-16 refers to a complimentary dinner given to Dr. F. E. Stewart of Philadelphia in honor of his fiftieth anniversary of graduation from the Philadelphia College of Pharmacy and Science. The bulletin interestingly speaks of the many activities of Dr. Stewart, during past years and up to the present time.

STATUE OF CRAWFORD WILLIAMSON LONG, PHYSICIAN-PHARMACIST PLACED IN STATUARY HALL OF THE CAPITOL.

The Crawford W. Long Memorial Association has placed a statue of the Discoverer of Ether Anesthesia in the "Hall of Fame" in the National Capitol, March 30. The unveiling attracted a large number, who assembled to do honor to the man who brought relief to sufferers under the surgeon's knife and made operations possible that could not have been thought of without the use of an anesthetic. The question of priority has been discussed many times by organizations and legislative bodies, and even at this late day there are disputants and supporters. All of those who concerned themselves with relieving the horrors of painful operations are entitled to grateful consideration, even though one anteceded the other in the use of ether.

Comment has been made elsewhere relative to the ceremonies at the Capitol. It was generally admitted that the faithfulness and loyalty of an apprentice in the drug store of Dr. Long made the placing of the memorial possible. This apprentice is a member of the AMERICAN PHARMACEUTICAL ASSOCIATION—

Henry Miller News Picture Service, Inc.

STATUE UNVEILED AT STATUARY HALL IN THE NATIONAL CAPITOL TO-DAY FOR THE FIRST TO PERFORM AN OPERATION UNDER ETHER.

Joseph Jacobs, of Atlanta—and the satisfaction which this brought to him was shown in his face, and it was clearly evident that this meant more to him than if honors had come to himself.

A large number of those present were from the State of Georgia, but institutions and organizations from other sections participated in the formalities. The Statue is of Georgia marble, the sculptor, John Massey Rhind and the carver, James K. Watt. The statue was unveiled by Dr. Long's daughters—Mrs. Frances Long Taylor and Miss Emma Long; with them on the platform was a great granddaughter of the discoverer.

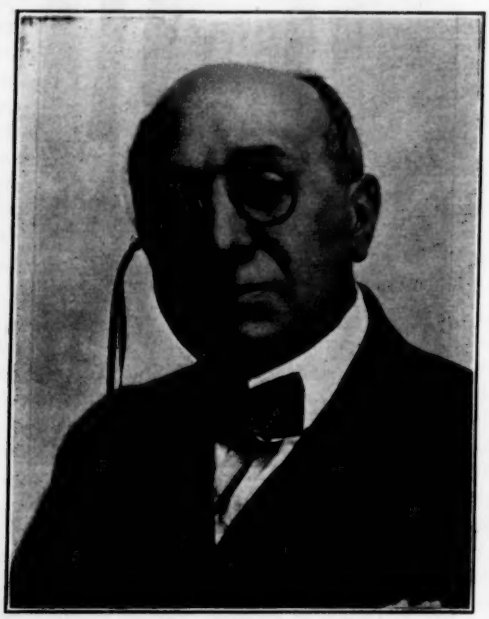
Dr. Frank K. Boland, president of the Crawford W. Long Memorial Association, pre-

sided. The first address was made by Joseph Jacobs, Vice-President of the organization, who spoke for the pharmaceutical profession, as friend and former employee of Crawford W. Long. It is quite generally known that Dr. Jacobs is a Robert Burns scholar; he closed his address with the quotation:

"But I'll remember thee, my friend,
And all that thou hast done for me."

The program was continued as follows:

Presentation of the statue to the State of Georgia, by Richard B. Russell, Chief Justice, Supreme Court, State of Georgia, and President of the Board of Trustees of the University of Georgia, from which Dr. Long graduated as A.M., in 1835.



JOSEPH JACOBS.

Presentation of the statue to the United States of America, by the representative of the Governor of Georgia, Col. George M. Napier, Attorney General of the State.

Acceptance of the statue by Senator W. J. Harris, of Georgia.

Address by Hugh H. Young, M.D., Johns Hopkins Hospital, for the medical profession of America.

Address by the Vice-Provost of the University of Pennsylvania, from which Dr. Long graduated M.D., in 1839.

Response by L. G. Hardman, M.D., for the Medical Association of Georgia.

Response by Rebecca Latimer Felton, former United States Senator from Georgia.

Response by William Hamilton Long, M.D., Secretary Southern Association of Anesthetists.

Response by Miss Virginia Gibbes, representing the nursing profession.

It was indeed remarkable to have Mrs. Felton, Ex-Senator, now past 90 years, speak with fervor of the benefits to motherhood through the discovery.

MEETING OF THE EXECUTIVE COMMITTEE OF THE U. S. P.

A conference of the members of the Executive Committee of the U. S. Pharmacopœia was held in Hotel Pennsylvania, New York, April 3, for the purpose of studying unsolved revision problems and to instigate research applying to revision. Members of the Committee present were: Chairman E. Fullerton Cook, H. C. Wood, Torald Sollmann, George W. McCoy, E. L. Newcomb, Frank R. Eldred, H. V. Arny, W. O. Richtmann, George M. Beringer, Wilbur L. Scoville, Jacob Diner, T. J. Bradley, and A. G. DuMez. Progress has been made in the plans under consideration.

Dr. A. B. Lyons, a past honorary president of the AMERICAN PHARMACEUTICAL ASSOCIATION, celebrated his 85th birthday, April 1. Many messages of cheer were sent to this active worker for pharmacy during more than a half century. Dr. Lyons has been in poor health for a number of years, but notwithstanding this he has assisted in revision work of the Standards, and contributed quite a number of articles, in recent years, to the JOURNAL of the A. PH. A. *Dr. A. B. Lyons died April 13. Sketch in next issue.*

A decade ago the seventy-fifth birthday of this honored member was celebrated. A number of those who sent greetings at that time have passed onward and several letters of that occasion are printed in the Volume for 1916, pp. 446–447. The opportunity is taken to express high regard for Dr. Lyons and to extend good wishes also to the helpmeet of many years, hopeful that the words of cheer may give her comfort.

Prof. Otto Raubenheimer could not continue his articles on the National Formulary in this issue of the JOURNAL, on account of sickness. It is hoped he will be strong and well again very soon. The second contribution of the series was well under way when the influenza compelled him to discontinue work for the time.

PERSONAL AND NEWS ITEMS.

William Gray, Chicago, has for a number of years given an annual prize of a membership in the AMERICAN PHARMACEUTICAL ASSOCIATION to a student of Illinois University, College of Pharmacy. He has now donated one hundred dollars, the interest of which is to provide for an annual membership prize. It would seem that this plan will appeal to others.

E. N. Meuser, Missionary Pharmacist to West China, is endeavoring to enlist interest and financial encouragement for the new school of pharmacy at West China Union University in Chengtu. Mr. Meuser, who is a graduate of the Ontaria College of Pharmacy, is now taking a post-graduate course in plant analysis at the Philadelphia College of Pharmacy and Science. He may be addressed care of the Y. M. C. A., 1421 Arch St., Philadelphia.

In a communication to the JOURNAL, Mr. Meuser states that chemistry, physics, etc., are taught in the University; the pharmaceutical work is conducted in the West China School of Pharmacy. He points out the importance of encouraging the school from various standpoints, including the fact that a number of our important drugs come from China. Doubtless there are some, perhaps many, who will interest themselves in the promotion of this school of pharmacy.

Prof. M. Albert Goris, recently named as professor of Galenical Pharmacy at the Paris Faculty of Pharmacy, gave as his first lecture a sketch of the History of Pharmacy from mythical times to the present.

A Central European Pharmacy Association is contemplated. The matter is being developed by Dr. Bela Zoltan and M. O. de Koritsanszky of the Hungarian Association of Pharmacists. The pharmacists of Austria are interested and it is hoped to bring the pharmacists of adjoining countries into the organization.

In the "Forty Years Ago" column of the *Western Druggist*, it is stated that "Henry H. Rusby, M.D., of Detroit, spent several months in Bolivia, studying the coca plant in its native environs and the products made from it there. He published an elaborate article in the *Therapeutic Gazette* on the cultivation of coca."

A. W. Pauley, member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1879, was the speaker at one of the March meetings of the down town Business Men's Club of East St. Louis. Mr. Pauley is secretary of the St. Louis College of Pharmacy.

Secretary W. H. Lamont, of the Missouri Pharmaceutical Association, was a representative of that organization at the North Western Drug Show held in connection with the Iowa State Pharmaceutical Association meeting at Des Moines.

The *St. Louis Star* conducts a "Fifty Years Ago" column, and in a recent issue it was mentioned that "M. W. Alexander, who formerly conducted a drug store at Fourth and Market is now establishing a drug store at Fifth and Olive streets. It is said to be one of the finest drug stores in the West." The late Mr. Alexander was President of the AMERICAN PHARMACEUTICAL ASSOCIATION during the year of 1887 to 1888.

Dr. George C. Diekman and **Prof. Curt P. Wimmer** were among the speakers at the "Blizzard Class" Dinner of the New York College of Pharmacy, held in Turn Hall, New York City, March 12.

Robert J. Ruth, "father of Pharmacy Week" idea, has been on the Pacific coast, compiling information on the various activities in which graduates of the Philadelphia College of Pharmacy and Science are engaged.

Henry Rollmann, treasurer of Wisconsin Pharmaceutical Association, and Mrs. Rollmann celebrated the golden anniversary of their wedding, March 16.

C. Herbert Packard, a past-president of the A. PH. A., is in Florida seeking the benefits of the "flower land's" climate.

Robert McNeil, of Philadelphia, has awarded a contract for a new fire-proof structure, at Cambria and 17th Streets.

Charles J. Lynn, who with Mrs. Lynn has been touring the Orient, is expected home, in Indianapolis, during this month.

Charles H. Huhn, of Minneapolis, a past-president of the N. A. R. D., is recovering from an attack of bronchial pneumonia.

Henry J. Frank, Portland, has donated $1000 to the Oregon State Pharmaceutical Association educational fund, according to an announcement by Dean A. Ziefle of the department of pharmacy, Oregon Agricultural College.

Walter D. Adams, secretary of the Texas Pharmaceutical Association commends cooperation of state associations with the National bodies. He states that the pharmacists are inspired by the work of the members of these organizations.

G. L. Haussamen comments on the benefits to be derived by organizations both state and national in the *Western Druggist*. He is highly impressed with the value and good work of the National Association of Boards of Pharmacy of the National Association of Retail Druggists and of the AMERICAN PHARMACEUTICAL ASSOCIATION.

Charles W. Holton, Treasurer of the AMERICAN PHARMACEUTICAL ASSOCIATION, and head of the Holzhauer Drug Company, at 783 Broad St., Newark, N. J., has leased the building at 853 Broad Street and will soon remove there. The Holzhauer business was located for more than seventy-five years at Broad and Market and since 1917, at 783 Broad Street.

Dr. Jacob Diner, Vice-Chairman of the House of Delegates, A. PH. A., attended the convention of Iowa State Pharmaceutical Association at Des Moines during the week commencing February 22nd.

Mr. and Mrs. George Binz, of Los Angeles, will make an automobile journey to New York City and other Eastern points; thereafter they will return by ship via Panama Canal. The coming convention will be the first annual meeting of California Pharmaceutical Association which Mr. Binz has failed to attend.

Ralph D. Bienfanf, of Jefferson, and Harold G. Hewitt, of Milwaukee, are the holders of the thirteenth award of the Hollister fellowship in pharmacy, established in 1912 by a bequest of Mrs. Kittie E. V. Hollister and in 1917 by a bequest of A. H. Hollister. The principal now is $10,326.06. The scholarship is awarded to a pharmaceutical graduate of the University who has served an apprenticeship in Wisconsin.

Prof. B. S. Hopkins, professor of Inorganic Chemistry at the University of Illinois, has announced the discovery of a new element—illinium. He shares the honor with L. F. Yntema and J. A. Harris of the Chemistry staff. The element falls in between neodymium and samarium.

OBITUARY.

ADOLPH A. POEHNER.

We are advised of the death of Adolph A. Poehner, member of the AMERICAN PHARMACEUTICAL ASSOCIATION, at San Francisco, on February 18, 1926, of coronary embolus.

Dr. Poehner is a graduate in medicine and also of the Philadelphia College of Pharmacy, class of 1886. The deceased was a member of the Pennsylvania and California Pharmaceutical Associations. He joined the AMERICAN PHARMACEUTICAL ASSOCIATION in 1907.

ARTHUR ROBERTSON CUSHNY.

Dr. Arthur Robertson Cushny, professor of Materia Medica and Pharmacology at Edinburgh University, since 1918, died February 25, at his home in Edinburgh, aged sixty years.

He studied and graduated in arts and medicine at Aberdeen University and took postgraduate courses at the Universities of Berne and Strassburg, and for some time was assistant at the latter. From 1893 to 1905 he was Professor of Pharmacology in the University of Michigan. In 1905 he came to the University College, London, where he remained until 1918, when he was appointed to the chair of Pharmacology in Edinburgh University, which he occupied until the time of his death.

Prof. Cushny's work was well known internationally and his textbook of Pharmacology and Therapeutics is a recognized authority. Quoting from an article in the *Pharmaceutical Journal and Pharmacist*:—"He did medicine a great service by sifting out useful from useless drugs, and separating from the mass of information on drugs that which could be relied upon as compared with dubious observations on the supposed action of drugs. This work was greatly appreciated both by doctors and students. He also made a special research as to the relationship between chemical structure and pharmacological action in relation to optical isomerism which formed the subject of a series of lectures he delivered at Baltimore, in the summer of 1925. In 1917 he published a classical and exhaustive research on 'The Secretion of the Urine,' which exhibits his extraordinary faculty of scientific criticism and is regarded as a masterpiece by physiologists. In 1924 he published 'The Action and Uses in Medicine of Digitalis and Its Allies,' giving an account of his own studies and the work of other investigators from the time of Withering onwards. From the time he came to Edinburgh in 1918 he took an active and very helpful interest in the work of the Pharmaceutical Society, and more especially in the Edinburgh Evening Scientific Meetings, in connection with which he was always most ready to give any information or advice."

SOCIETIES AND COLLEGES.

MEDICAL EXHIBIT AT SESQUI-CENTENNIAL EXPOSITION.

The board of directors of the Sesqui-Centennial Association has appropriated $250,000 for the medical exhibition. The exhibit will include all phases of the scientific treatment of the sick, and will cover 15,000 square feet of floor space. There will be a model sanatorium and separate sections dealing with the medical specialties, the progress of medical education, the recent medical discoveries, and a pharmacy exhibit and a dental display. Prominent physicians will be in charge of the sections.

May Day is now "Child Health Day," and the program to be followed is under the direction of the American Child Health Association.

HOSPITAL PHARMACISTS' ASSOCIATION FORMED IN SOUTHERN CALIFORNIA.

The Hospital Pharmacists' Association of Southern California has been formed and is a step in the right direction and a good lead for hospital pharmacists in other sections of the country to follow. We are quoting from *Squibb Message:*

"At a recent meeting of the association 'Points of Law Affecting the Hospital Pharmacist' was one of the subjects which was of special interest. 'The Narcotic Regulations' was of equal importance. 'Coöperation between Physicians and Hospital Pharmacists' brought out many points of particular value to the representatives of both the medical and the pharmaceutical professions.

"New legislation pertaining to the practice of pharmacy, salesmanship, personality and pricing have also been discussed and acted upon at these monthly sessions. A meeting with the Hospital Council, an organization of hospital superintendents, was devoted to such subjects of joint interest as the handling of narcotics, special preparations, prices and emergency supplies. The outcome was a better understanding of mutual problems and the establishment of personal acquaintance.

"In a practical way, the association in one year's time has shown results in the way of attaining more uniform working methods and hours and improved conditions under which to practice. The hospitals to which the members are attached have been prompt to accept these improvements. The original membership has more than doubled and now includes pharmacists representing the majority of the larger hospitals of Southern California."

STATE ASSOCIATION PROPOSED.

"The formation of a state organization has been suggested; while most of the hospitals employ but one pharmacist and many of these cannot attend the meetings regularly, by correspondence it has been found possible to develop and maintain an interest in the work among those eligible to membership that permits them to keep in close touch with the association's plans and accomplishments.

"A large measure of the success of the Hospital Pharmacists' Association of Southern California has been due to the efforts of its present officers, who are: *President,* P. W. Howard, Methodist Hospital of Los Angeles; *Vice-President,* Frank Fuller, Glendale Hospital; *Secretary and Treasurer,* Miss Helen Stiles, Angelus Hospital, Los Angeles. Mrs. S. E. Chaney, pharmacist at the Clara Barton Hospital, of Los Angeles, relinquished the duties of Secretary and Treasurer of the association last year, after rendering especially valuable service in its organization and early activities."

STATE ASSOCIATIONS.

The Texas Hardware Association proposes the formation of local associations in which there is to be representation of all merchandisers. The purpose of the organization is to adjust trespassing on the domains of the dealers represented in the association. Hardware dealers sell some items that belong to the drug stores and the latter deal in merchandise that properly belongs to the former. The idea may not be very easy to apply, but there is opportunity for adjusting unsatisfactory conditions and, after all, confidence and working together for the betterment of trade conditions will aid all who share in the endeavor.

Oklahoma is planning a most interesting and instructive program for the convention at Tulsa.

The announcement of Secretary, Miss Mary A. Fein, of the Arkansas Association, is unique and should meet with responses of those who seek for information as well as recreation.

North Carolina Association will hold sessions on board one of the palatial steamers of the

Old Dominion Steamship Line, on a trip which takes in New York City and some stops on the way, both coming and going. A very moderate rate has been secured which provides for sightseeing and essential accommodations. The officers certainly are entitled to credit for arranging such an interesting meeting. Other state associations have held conventions while traveling, but this is probably the longest trip ever undertaken by an association.

New York State will hold its convention at Saratoga Springs and headquarters will be at the Grand Union Hotel.

The Texas Pharmaceutical Association Bulletin has 16 pages of State Association matter and news items of interest for the members. The greater part of the *Bulletin* concerns the coming convention and annual drug show. The editorial work was well presented by Secretary Walter D. Adams.

Other Association items will be reported in next issue of the JOURNAL. A list of state meetings is given in this section.

CHICAGO AND ILLINOIS ASSOCIATIONS.

The annual banquet and get-together party of the Illinois Pharmaceutical Association was held at Hotel Sherman, March 20. At this time plans were laid for the annual convention to be held in Chicago, June 29 to July 1.

The annual practice of the Chicago Drug Club is to invite members of the Chicago Veteran Druggists' Association. This meeting was held on March 25. At the March 11 meeting of the Chicago Veteran Druggists' Association, Herman Fry was the "birthday child." An interesting letter was read from Joseph F. Forbrich who has been motoring through France and other countries along the Mediterranean. Prof. Wm. B. Day was absent on account of being confined by an attack of the influenza.

A testimonial dinner was given to Mr. S. L. Antonow at the Hamilton Club in Chicago on March 23, under the auspices of the Chicago Retail Druggists' Association.

ST. LOUIS RETAIL DRUGGISTS' ASSOCIATION.

President F. H. Fricke, of the St. Louis Retail Druggists' Association, presided over the February meeting of that organization. The members honored the President, expressing their attachment by flowers. Field Secretary M. J. Noll, of the Missouri Pharmaceutical Association, addressed the members on legislative topics. He said, among other good things, that Missouri would be saved about three million dollars by the non-passage of a tobacco tax which had been adopted in other states.

The Missouri Board of Pharmacy has a record of twenty-five convictions in Kansas City for pharmacy law violations. This evidences the observations of the practice of pharmacy by the Missouri Board, and that convictions followed indicates careful investigation by the Board.

MILWAUKEE VETERAN DRUGGISTS' ASSOCIATION.

At the February monthly meeting of the Milwaukee Veterans' Association, the birthdays of Dr. Edward Kremers and E. G. Raeuber were celebrated. The latter gave a brief history of the Wisconsin Pharmaceutical Association. The following officers were elected for the ensuing year: *President*, Christian Koerner; *Vice-President*, Otto Hackendahl; *Secretary*, E. G. Raeuber; *Sergeant-At-Arms*, Oscar Widule.

THE AMERICAN DRUG MANUFACTURERS' ASSOCIATION MEET IN NEW YORK.

The 15th annual meeting of the American Drug Manufacturers' Association convened at Hotel Biltmore, New York, this week. Section meetings were held Monday and Tuesday—Scientific, Pharmaceutical and Surgical Dressings, Crude Drug, and Biological. The Business Meetings were opened on Tuesday and the convention closed with a banquet on Thursday night. The following were among the speakers of the Section and Business sessions: L. E. Warren, of the U. S. Bureau of Chemistry, on "The Project for Drug Research;" Dr. William White, of the Hygienic Laboratory, on "Coöperative Research;" Dr. Robert A. Hatcher on "The Relation of Pharmacology to Rational Therapeutics;" Francis P. Garvin on "Progress in Chemistry and Medicine," Williams Haynes on "Drug Market Conditions."

ANNUAL MEETING OF THE PROPRIETARY ASSOCIATION.

Secretary Charles P. Tyrell has announced the dates, May 11th and 12th, for the meeting of The Proprietary Association, to be held in Hotel Pennsylvania, New York City.

HOME FOR AGED DRUGGISTS.

The trustees of the P. A. Mandabach Memorial Druggists' National Home at Palmyra, Wis., announce that the institution will be opened this spring. It will constitute a place of retreat for unfortunate sick, disabled or retired pharmacists. Until the endowment fund of $300,000 is complete, a minimum donation of $500 will be required from each applicant who is accepted. Application blanks are being distributed.

NEW QUARTERS OF NEW YORK DRUG AND CHEMICAL CLUB.

The new quarters of the New York Drug and Chemical Club will be opened May 3, in the building of the National Board of Fire Underwriters. The club rooms will be on the 13th and 14th floors. The new quarters will be considerably larger than those at present occupied, and there will be ample facilities for taking care of the club's increased membership. All of the hangings and much of the furniture will be new.

BROOKLYN ALUMNI.

The Alumni Association of the Brooklyn College of Pharmacy held its first meeting for the year at the College Building. The various Committees tendered able and interesting reports. Dr. Wm. C. Anderson introduced Mr. S. S. Dworkin as the speaker for the evening; his topic "Why not sell Biologic Products" was well received.

IOWA COLLEGE OF PHARMACY IN A NEW BUILDING.

The University of Iowa College of Pharmacy will occupy the first two floors of a building being erected near the new Chemistry Building. The present quarters of the College will be converted into study halls and a reserve library.

ALBANY COLLEGE OF PHARMACY BUILDING.

Plans for the new College of Pharmacy to be built in New Scotland Avenue, Albany, N. Y., opposite the Albany Hospital and adjoining the state laboratory, are ready for bidders, Dean William Mansfield has announced. The plot is of more than two acres.

Development of the grounds will be a feature. Native trees will be planted, and there will be a medicinal plant section, a poisonous plant section and a section with all the wild flowers of New York State that it is possible to grow.

The college building will be 178 feet long and three stories high. The ground floor will be occupied by the pharmacy department and will contain a dispensing pharmacy laboratory, a manufacturing pharmacy laboratory, two recitation rooms, assembly room, store room, assembly rooms, etc. The main floor will contain the botany and materia medica department, executive offices, a library, recitation room, plant laboratory, auditorium seating 500, locker rooms and check room. The second floor will be occupied by the chemistry department.

NEW JERSEY COLLEGE OF PHARMACY.

At a recent meeting of the Board of Trustees of the New Jersey College of Pharmacy, an Advisory Board was elected, consisting of the following members, all of whom have accepted: Hon. Alfred N. Skinner, Hon. Harry V. Osborne, R. C. Jenkinson, Edward W. Jackson, Frank Jones, Hon. William E. Hoffman, August Merz, John D. Foster, Charles Elliott, George B. Schulte, William Mennen and Paul W. Menk.

The college now occupies the handsome and commodious building at Belleville, Arlington and Lincoln avenues, which was erected and equipped last year at a cost of approximately a quarter of a million dollars. The Board of Trustees felt that the time had come to add to their body an Advisory Board of eminent public-spirited citizens whose counsel and influence would aid in the further development of the institution.

BRANCHES CAN GIVE COÖPERATIVE AID TO HEADQUARTERS PROJECT.

Branches of the AMERICAN PHARMACEUTICAL ASSOCIATION can promote the Headquarters project by having this a subject for consideration at each Branch meeting. This will have particular value during the closing meetings of the season and prior to the annual AMERICAN PHARMACEUTICAL ASSOCIATION Convention in Philadelphia, during the week of September 13.

PACIFIC COAST MUCH INTERESTED IN A. PH. A. HEADQUARTERS.

Assistant Publicity Director Sater found an encouraging spirit of coöperation everywhere along the Pacific Coast. The retail pharmacists of southern California will open their campaign under the direction of Mr. Mortensen in May and northern California is now carrying on under the leadership of W. Bruce Philip.

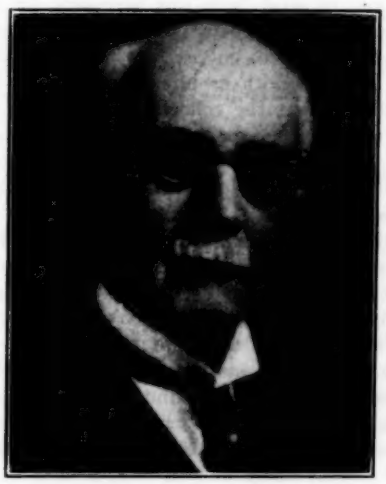
1926 STATE PHARMACEUTICAL ASSOCIATION MEETINGS.*

STATE.	TIME.	PLACE.	PRESIDENT.	SECRETARY.	LOCAL SECRETARY.
Alabama	June	Mobile	H. E. Duncan, Birmingham	W. E. Bingham, Tuscaloosa	S. H. Colvin
Arizona	Nov. 5–6	Phoenix	E. C. Stultz, Phoenix	Arthur G. Hulett, Phoenix	
Arkansas	May 11–13	Little Rock	P. R. Turner, Marianna	Miss Mary A. Fein, Little Rock	
California	May 25–27	Long Beach	F. O. McColloch, Los Angeles	T. W. Jones, Los Angeles	
Colorado	June	Boulder	Karl M. Frey, Pueblo	Chas. J. Clayton, Denver	
Connecticut			H. C. Hodge, East Hampton	P. J. Garvin, New Haven	
Delaware	June	Rehoboth	James W. Wise, Dover	T. S. Smith, Wilmington	
Florida	June 18–19	Jacksonville	John R. West, Jr., Tarpon Springs	J. H. Hansbrough, Tampa	
Georgia	June 16–18	Macon	A. R. Munn, Atlanta	C. V. Hohenstein, Atlanta	
Idaho	October	Boise	J. E. Holmes, St. Anthony	J. C. Andersen, Boise	J. C. Andersen
Illinois	June 29–July 1	Chicago	Lee M. Pedigo, Chicago	W. B. Day, Chicago	
Indiana	June 15–17	Culver	E. E. Goodnight, La Fayette	Wm. A. Oren, Indianapolis	
Iowa	February 23–26	Des Moines	Denny Brann, Des Moines	J. W. Slocum, Indianola	
Kansas	April 20–21	Topeka	Chas. H. Andrews, Wichita	C. W. Gates, Topeka	Percy Walker
Kentucky	June 15–17	Crab Orchard Springs	Geo. J. Ellis, Glasgow	J. W. Gayle, Frankfort	
Louisiana	May 11	Baton Rouge	Aug. C. Flach, New Orleans	Geo. W. McDuff, New Orleans	
Maine	September	Belgrade Lake	Wm. T. Quinn, Hallowell	James H. Allen, Waterville	
Maryland	June 22–25	Buena Vista Springs	Samuel Y. Harris, Baltimore	E. F. Kelly, Baltimore	
Massachusetts	June 9–11	Swampscott	Maurice W. Corbin, Worcester	James F. Guerin, Worcester	
Michigan	August 3–5	Bay City	E. J. Fletcher, Grand Rapids	L. V. Middleton, Grand Rapids	J. Kennard Johnson
Minnesota	1927		John B. Christgau, Owatonna	Gustav Bachman, Minneapolis	
Mississippi	June 8–9	Jackson	A. C. Strealy, Vicksburg	A. S. Coody, Jackson	J. W. Pollard
Missouri	June 15–18	Kansas City	W. A. Ackenhausen, Kansas City	W. H. Lamont, St. Louis	H. J. Nie
Montana	July 12–13	Butte	Chas. Quist, Butte	J. A. Riedel, Boulder	W. R. Montgomery
Nebraska	June 8–10	Omaha	Fred Witt, Nebraska City	J. G. McBride, University Place	
New Hampshire			Frank R. French, Tilton	O. Leo Hallisey, Nashua	
New Jersey	June 8–11	Atlantic City	Max Fried, Newark	Jeannot Hostmann, Hoboken	
New York	June 22–25	Saratoga Springs	T. Bruce Furnival, Syracuse	Edw. S. Dawson, Syracuse	
[1]North Carolina	June 21–25	New York City	A. A. James, Winston-Salem	J. G. Beard, Chapel Hill	
North Dakota	August 3–5	Jamestown	R. C. Hanson, Pingree	W. F. Sudro, Fargo	Carl Odney
Ohio	July 19–23	Cedar Point	Henry Pollack, Cleveland	Theo. D. Wetterstroem, Columbus	L. A. Biehl, Sandusky
Oklahoma	May 11–13	Tulsa	H. S. Caldwell, Oklahoma City	H. S. Shackleford, Wynnewood	Cecil Stewart
Oregon	July 12–14	Gearhart	A. W. Allen, Portland	Frank S. Ward, Portland	
Pennsylvania	June 15–17	Buena Vista Springs	Geo. F. Lee, Johnstown	Louis Saalbach, Pittsburgh	Harlan Mentzer, Blue Ridge
Rhode Island			F. N. Strickland, Providence	Wm. Shallcross, Providence	
South Carolina	June 16–17	Charleston	Robt. M. Dacus, Greenville	Frank M. Smith, Charleston	Frank M. Smith
South Dakota	August 17–19	Watertown	Geo. Sherman, Huron	W. P. Loesch, Oldham	T. A. Duffner
Tennessee	July 20–22	Knoxville	A. D. Albright, Knoxville	Wm. P. Winter, Nashville	
Texas	June 15–17	Dallas	A. W. Griffith, Austin	W. D. Adams, Forney	R. A. Green
Utah	June 9–10	Salt Lake City	F. E. Ulrich, Morgan	John Culley, Ogden	Ed. Johnston
Vermont	June	Fairlee	W. E. Chapman, Fairlee	F. W. Churchill, Proctor	
Virginia	June	Bedford	Chas. L. Guthrie, Petersburg	A. L. I. Winne, Richmond	W. L. Lyle
Washington			C. B. Kinne, Seattle	H. W. Ayers, Seattle	
West Virginia	June 22–24	Charleston	Gay Dent, Morgantown	Roy B. Cook, Charleston	
Wisconsin	June 22–24	La Crosse	Adolph E. Haise, Milwaukee	E. G. Raeuber, Milwaukee	E. S. Hebberd
Wyoming		Sheridan	R. C. Schultz, Worland	L. R. Tyson, Sheridan	

* Secretaries will oblige by making corrections and sending list of new officers to JOUR. A. PH. A., 10 West Chase St., Baltimore, Md.
[1]N. C.—On Boat Trip and in New York City, Headquarters Hotel Pennsylvania.

Secretary H. C. Christensen, of the National Association of Boards of Pharmacy, has been laid up for several weeks, because of an attack of muscular rheumatism. We are pleased to learn that he is improving and hope that the Secretary will soon be well again.

A testimonial dinner was tendered to **Dr. F. E. Stewart**—well- and favorably-known member of the AMERICAN PHARMACEUTICAL ASSOCIATION—March 23, by the faculty of Philadelphia College of Pharmacy and Science. The occasion commemorated the fiftieth anniversary of Dr. Stewart's graduation from the College and in recognition of his long and fruitful service in the advancement of professional and business ethics in connection with the manufacture and distribution of medicinal products.



DR. FRANCIS E. STEWART.

Prof. C. H. LaWall acted as toastmaster, and brief addresses were made by Joseph W. England, J. W. Sturmer, Ambrose Hunsberger, Milton Campbell, E. Fullerton Cook, W. W. McNeary, David Wilbur Horn and others. The hosts and guests numbered more than fifty and the occasion was a most delightful one.

FULL-TIME SECRETARY FOR PENNSYLVANIA PHARMACEUTICAL ASSOCIATION.

Joseph G. Noh—member of the faculty of Purdue University—has been named full-time secretary, with permanent offices in Harrisburg, of the Pennsylvania Pharmaceutical Association.

Prof. Noh is a graduate of the University of Nebraska School of Pharmacy where he received the degrees of Pharmaceutical Chemist and Bachelor of Science in Pharmacy. For a time he was assistant in the Pharmacy Department of his *Alma Mater* and then became a member of the faculty of the New Jersey College of Pharmacy. Later, he accepted appointment on the faculty of Purdue University, teaching general pharmacy, prescription compounding and commercial pharmacy.

Secretary Noh will assist in the organization of county and local associations, conduct the employment service for members, protect the interests of the pharmacists in legislative matters, maintain a complete file of state and federal narcotic, prohibition and pharmacy laws and edit a monthly letter or bulletin for the members.

State associations are realizing more and more that it is essential to have a full-time secretary for adequate association service.

DEATH OF J. G. McLEAN.

We are just advised of the death of J. G. McLean, reporter of the Proceedings of the AMERICAN PHARMACEUTICAL ASSOCIATION for many years, and during past years he has reported some of the sections and the Proceedings of the National Association of Boards of Pharmacy. He made many friends in these organizations.

HEARINGS ON CAPPER-KELLY RESALE PRICE BILL—APRIL 22–23.

Hearings on the Capper-Kelly Resale Price Bill will begin at ten o'clock April 22. Those who desire to appear at these hearings should reach Washington for conference and prepare arrangement of program at the Hotel Washington not later than Wednesday morning, April 21.

DENTISTS SEEK TO MAKE THEIR CONVENTION IN PHILADELPHIA AN INTERNATIONAL MEETING.

Lieutenant Commander William L. Darnall of the United States Naval Hospital, Washington, D. C., appeared before the House Committee on Foreign Affairs, in favor of the resolution requesting the President to invite foreign delegates to the seventh international dental congress at Philadelphia, August 23rd to 28th. The resolution also requests an appropriation of $5000 for 10 delegates to represent the United States. The resolutions were favorably reported.

THE PHARMACIST AND THE LAW.

GOVERNMENT NARCOTIC MONOPOLY BILL PROPOSED.

A government narcotic monopoly is proposed in a bill introduced by Representative Kindred of New York.

The Kindred bill would create the Federal Narcotic Bureau, a corporation, to which would be granted power and authority to make all imports of narcotic materials and preparations, manufacture narcotics, distribute and sell the same. The bureau, with a board of five directors appointed by the President, at $12,000 a year each, would be authorized to condemn and take over the plants and equipment, etc., of narcotic drug manufacturers in the United States, paying for the same with the proceeds of a government bond issue, bearing 5½ per cent interest.

The possibility of passing such a measure may well be questioned; it does not seem practical nor advisable for the Government to engage in such an undertaking, and there is a growing feeling that the business men of the country are contributing to the salaries of a very large force of employees now, and reluctant to have the number greatly increased, unless a necessity exists. In this day of more or less laxity in law enforcement, it certainly is to the credit of the drug trade that the narcotic laws are well observed. With comparatively few exceptions, violations are outside of the drug trade.

HARRISON NARCOTIC ACT AND PRESCRIPTIONS.

(*United States v. Bush* (*U. S.*), *6 Fed. R.* (*2d*) *303.* Reported in the *Journal A. M. A.*)

The United States District Court, Western District of Louisiana, Shreveport Division, in overruling a demurrer to an indictment which charged that the defendant physician did unlawfully sell, etc., 12 grains of morphine sulphate, by issuing a prescription, says, in an opinion written by District Judge Dawkins, that, as he construes the decisions of the Supreme Court of the United States, the effect is substantially this: That while the statute, as a tax measure, is constitutional, nevertheless it must be construed by the courts in such a way as to effectuate collection of the tax, and cannot be used purely as a police measure, either as to physicians or as to others. The holding in substance is that the regulations requiring the registration and the issuance of prescribed forms for the sale, distribution, etc., of the drug, are reasonable provisions calculated to insure the collection of the tax and that none of the drugs shall be distributed without its payment, and that in any case wherein the result of the course pursued by a physician or others may reasonably have the effect of defeating the collection of that tax, such acts may be penalized by the statute, and those guilty of such offenses may be charged within the language of the law and punished accordingly.

In other words, under *Linder v. United States*, 45 Sup. Ct. 446, it would be lawful for a practicing physician, in treating a bona fide patient who had applied to him for that purpose, to prescribe what, in his professional opinion, in good faith was necessary for the alleviation of the pain and suffering incident to addiction, and, unless there appeared some lack of good faith or ulterior purpose calculated to defeat the collection of the tax, the courts would not be justified in condemning and regulating that discretion. On the other hand, it is entirely possible for a physician to violate the statute by prescribing indiscriminately to all persons large doses of the drug, though the same quantity to a known addict who was a bona fide patient might be perfectly legitimate.

The charge in this case was made in the language of the statute, and declared that, while the drug was distributed on a prescription, the same was done, not within the course of professional practice or to a bona fide patient. These were allegations of fact, which, if sustained, would be sufficient to justify a conviction by a jury. However, if on the trial it was shown, in contradiction of the charge itself, that the party to whom the drug was administered was a bona fide patient or person addicted to the habit, and for whom it was necessary to prescribe in order to alleviate pain suffering, then a case would be presented in which the court would be compelled, in the light of the Linder case, to charge the jury to return a verdict of not guilty.

None of the decisions have indicated what would or would not be an unreasonable amount to be prescribed by a physician. The reason for this is, as indicated above, that each case must stand on its own facts, and that, while in one case a physician might be guilty of violating the law for prescribing a small quantity, in another he would not be guilty

in distributing a larger amount, dependent on the circumstances of each particular case.

PROHIBITION REFORM BILL.

The Treasury Department bill for prohibition and customs bureaus was reported favorably by Representative Green's subcommittee March 26 to the full committee on ways and means, by which it was approved. It was reintroduced in amended form and is being reported formally from committee to the House of Representatives. The principal amendments relate to narcotic law enforcement, the taking of appeals from prohibition rulings, and application of the civil service to prohibition force employees.

The narcotic amendment provides, that narcotic administration shall be vested in the Secretary of the Treasury instead of the Commissioner of Internal Revenue as under existing law, but authorizes the secretary to assign the duties of administration to subordinates.

GINGER TINCTURE BAN PUT OFF TILL JUNE 1.

Treasury Department officials have extended to June 1 the time limit within which double strength tincture of Jamaica ginger, manufactured prior to January 1, 1926, and in the hands of manufacturers, jobbers, or retailers, may be sold. An extension of time was allowed last year for this purpose, from January 1 to April 1, but it is understood that dealers, particularly on the Pacific Coast, find themselves unable to dispose of stocks during that time. Ginger tinctures were outlawed as an intoxicant by edict of the department issued early in the winter.

U. S. CHAMBER OF COMMERCE ON RESALE PROFIT PROTECTION LEGISLATION.

Following are the four propositions which were favored by the majority who voted in this referendum of the Chamber of Commerce of the United States; they, however, did not receive the required two-thirds vote of the members:

1. There should be federal legislation, permitting the seller of identified merchandise sold under competitive conditions under a distinguishing name, trade mark or brand, to control the resale price thereof.

2. Such legislation should take the form of permitting contracts for the maintenance of resale prices on identified merchandise sold under competitive conditions under a distinguishing name, trade mark or brand.

3. The restrictions, proposed by the special committee of the Chamber of Commerce of the United States, and included in the referendum pamphlet, would be proper restrictions.

4. In addition to such legislation, Congress should enact legislation bringing under the law of unfair competition the cutting of the seller's declared price which results in misappropriating or injuring good will attaching to articles identified as to origin.

ANOTHER METHOD OF OBTAINING GOODS UNDER FALSE PRETENSES.

Secretary W. Bruce Philip, in the "Weekly Information Letter," issues a warning based on the experience of a San Joaquin Valley druggist—reported as follows:

"A very fine gentleman representing himself to be from Coty called on us about 5 one afternoon, told us all about their new policy, new window trims, new packages, no more bulk goods, etc. He asked about leaky packages, explaining a new stopper that would prevent this in future. Incidentally, he picked out the damaged packages, made a note of them and instructed us to send them in for replacement. After putting these packages aside to be sent by parcel post, the writer happened to think of several leaky packages at one of our branch stores. As there was no delivery boy to send for the packages, the gentleman kindly suggested that he would go down himself and look these packages over and pick out whatever should be returned with our package. The branch store was notified that Coty's man would pick up whatever damaged stock there was on hand—*and he did!* The writer had no suspicion of him as he made no attempt to take any merchandise out of the first store. At the branch store he told them that there were a number of old-style packages on hand and he would be glad to have them replaced and the manager fell for it to the tune of about $40.00."

The "Gentleman" was not a representative of Coty and has not returned to the stores mentioned.

BOOK NOTICES AND REVIEWS.

Memoranda of Toxicology. By Max Trumper, B.S., A.M., formerly Lecturer on Toxicology, Jefferson Medical College, Philadelphia, with Introduction and Addenda by Henry Leffmann, A.M., M.D., Emeritus Pathologic Chemist, Jefferson Hospital, Philadelphia. Pocket size, Flexible Binding, Round Corners, XII + 230 pages, $1.50. Publishers, P. Blakiston's Son & Co., Philadelphia, December 1925.

Here, at last, we have a small book, but quite up to date, at a reasonable price, that is ideal for the pharmacist and the pharmacy student. Partly based upon Dr. Tanner's "Memoranda of Poisons," it follows that author's scheme of classification of poisons. The book is, therefore, divided into four parts. In Part I, the author devotes ten chapters to "General Toxicology" and the "Corrosives;" in Part II, four chapters are devoted to "Simple Irritants;" in Part III, ten chapters to "Specific Irritant Poisons;" and in Part IV, ten chapters to "Neurotic Poisons."

Toxicology, in its broadest sense, includes also treatment of poisoning. The value of the book would be materially increased if a statement regarding the treatment were given in connection with each poison as it is taken up, even the statement that the treatment is the same as given for some preceding poison would be of much value. For the following poisons, either no treatment is given or, if given, is difficult to find—Hydrofluoric Acid, page 41; Tartaric Acid, page 46; Bromine, page 87; Barium, page 130; Morphine, page 144; Formaldehyde, page 159; Cocculus Indicus, page 160; Darnel Seeds, page 160; Datura, page 165; Nightshade, page 167; Curare, page 174; Calabar Bean, page 175; Conium, page 175; Tobacco, page 186; Lobelia, page 187; Colchicum, page 187; or for any of the Abortives, page 198.

The author has had some difficulty with his botanical names; some specific names which should be written with capitals are written with small letters and some that should be written with small letters are written with capitals—it should be *Lolium temulentum*, not "L. Temulentum;" *Atropa Belladonna*, not "A. belladonna;" *Datura Stramonium*, not "D. stramonium;" *Solanum Dulcamara*, not "S. dulcamara;" *Erythroxylon Coca*, not "E. coca;" *Strychnos Nux-vomica*, not "S. nux-vomica," and *S. Ignatii*, not "S. ignatii;" *Physostigma venenosum*, not "P. Venenosum;" *Conium maculatum* not "C. Maculatum;" *Aconitum Napellus*, not "A. napellus;" *Digitalis purpurea*, not "D. Purpurea;" *Nicotiana Tabacum* not "N. Tabacum;" *Lobelia inflata*, not "Lobelia Inflata;" *Colchicum autumnale* not "C. Autumnale;" *Asagræa officinalis*, not "Asagreæ officinalis."

Alkaloids should end in *ine*, not in *in;* eserin should be eserine; colchicin should be colchicine, and veratrin should be veratrine.

The author on page 178 speaks of Aconite as an indigenous plant; *Aconitum Napellus* is not indigenous to our country.

Other mistakes noticed in spelling are antipyrin, for antipyrine; acetanilide for acetanilid, and phenacetine for phenacetin. On page 160, "Cocculus Inducis," should be *Cocculus Indicus;* "Pharmacopea" and "Pharmacopeia" should be *Pharmacopœia;* and *tetraethyl* lead should be "tetraethyl or tetrethyl" wherever the word is used and not once "tetraethyl" and again "tetrethyl." Other mistakes have crept in but are much less important.

In spite of the above criticisms, the book is a step in the right direction, the production of a book describing the effects of the more important poisons and their treatment, and published at a price within the reach of the average student.—CHARLES C. PLITT.

Practical Pharmacognosy. By T. E. Wallis, B.Sc. (Lond.), F. I. C., Ph.C., Lecturer in Botany to the Pharmaceutical Society of Great Britain; with 81 illustrations, 115 pages. London. J. & A. Churchill, 1925.

This combined manual and text is designed for 18 laboratory exercises in Part I and contains a Key for the recognition of medicinal plants in Part II. In each exercise is presented the schedule of instructions, followed by notes on the exercise. The exercises do not follow any of the usual schemes found in "pharmacognosies" but present microscopical studies of typical starches, hairs and fibers, spores and pollen, plant hairs, structure of leaves, flowers, fruits and seeds, barks, rhizomes and roots.

It is especially worthy of note that microchemical tests are frequently employed in these exercises as well as a number of tests that are not observed with the microscope. This feature of pharmacognosy is of increasing interest and is constantly receiving more attention from teachers of pharmacognosy.

This book by Prof. Wallis has been splen-

didly designed and should prove attractive to students and teachers of pharmacognosy.—

E. N. GATHERCOAL.

The Technology of Wood Distillation. By M. Klar, Translated from the Second German Edition by Alex. Rule. D. Van Nostrand and Company, 8 Warren Street, New York. Price, $7.50.

This is a book of 21 chapters, covering 485 pages of text, 11 pages of index, and contains about 50 illustrations made mostly from line drawings which serve to give the reader clear ideas as to the arrangement and operation of apparatus. There are also about 50 tabular arrangements of data, and 7 flow-sheets, all full of valuable information. The information in the book seems to have been drawn from some 30 different periodicals, mostly foreign, as well as from the author's own experience. The final chapter was written by the translator and is intended to bring into the book the latest data concerning wood distillation industries, the original work not having been revised for some years.

The chief phases of the industry considered are: History, Raw Materials, Chemical Changes, Products, Preparation of Wood, Arrangement of Apparatus, Treatment of Products, Methods of Obtaining Intermediate and Final Products from the Primary Distillate, Briquetting of Charcoal, Analysis of Raw Materials, Intermediate and Finished Products Both Qualitatively and Quantitatively.

The subject seems to be very well covered, and both author and translator are to be complimented for having put into very readable and intelligible form a mass of information about an industry the importance of which is not realized by the layman and, perhaps, not by many chemists outside of those immediately concerned. Paper, binding, typography and press-work leave little to be desired from a mechanical point of view. The reviewer commends it not only to those directly interested in the industry, but to others who would care to read a good résumé of it.

F. P. STROUP.

Die Alkaloide. Von Prof. Dr. Julius Schmidt in Stuttgart and Prof. Dr. Viktor Grafe in Wien, Mit 15 Textabbildungen. Lex. 636 pp. Urban und Schwarzenburg, Friedrichstr 105 B, Berlin N.

Many are the published books on alkaloids, but the one before us is one of the most thorough and complete. It is Part Nine of Division I, "Chemical Methods" of the monumental work "Handbuch der biologischen Arbeitsmethoden" by Abderhalden and his collaborators, to which the referee had the pleasure to direct attention on many previous occasions.

The two divisions of the book are as follows:

I. Detection of Alkaloids Containing Extraction, Precipitation Methods, Color Reactions, Qualitative and Quantitative Analysis and Microchemical Analysis.

II. Structure and Synthesis, Containing Phenyloxyalkylamines, Pyridine, Pyrrolidine, Quinoline, Isoquinoline, Phenanthrene and Purine Groups.

In connection with a research on Papaverine the referee found that the book devoted 16 pages to this alkaloid and naturally many more pages to the more important ones. Surely an example of the proverbial thoroughness of the two German authors! The book is a masterwork on the subject of Alkaloids.

Verlag S. Karger, Karlstr. 15, Berlin N. W. 6, submitted the following two books for review:

Kurzes Lehrbuch der Chemischen Physiologie, Von Dr. Ernst Schmitz. Lex. 334 pp. Mk. 7.20.

The author prefers the title "Chemical Physiology" to the one "Physiological Chemistry." He is an authority on this subject, being Professor and Director of the Physiological Institute, University of Breslau. The treatment of the subject is plain, concise, and truly practical. It will therefore appeal to both student and laboratory worker. Pharmacists should also possess more knowledge on this subject and the book can be highly recommended for this purpose.

Die Insulinbehandlung bei Diabetes Mellitus. Von Prof. H. Strauss und Dr. M. Simon, Berlin 4, vermehrte und verbesserte Auflage. Octavo 74 pp. Mk. 3.

Only two years old and in its fourth edition. This speaks for itself. It is surprising how much information there is contained in these 74 pages. Four pages alone are devoted to the history of insulin and the bibliography comprises nine pages in small print. An excellent treatise of this subject.

The well-known publisher, Curt Kabitzsch, Dörrienstr 16, Leipzig, sent the two following books for review:

Pathologische Biologie (Immunitätswissenschaft). Von Prof. Dr. Hans Much in Hamburg. 5. Auflage mit 8 Tafeln und 7 Abbildungen. Lex. 415 pp. $3.00.

Since the publication of the first edition in 1910 the science of immunity or pathologic biology has made such rapid progress that five editions have been necessitated. Among the 13 chapters into which the work is divided, I want to mention the following headings: I. Biology. III. Immunity and Virulence. VI. Toxins, comprising Diphtheria, Tetanus, Botulism, Dysentery, Gasbacilli and Snake Venoms. IX. Biologic Medication. X. Idiosyncrasy. XI. Biologie Diagnosis. XII. Colloidal Chemistry and Reactions.

Among the eight excellent full-page plates in colors, real works of art, the following are of special interest: V. Quantitative Wassermann Reaction from Negative to 5 Positive. VII. Tubercular Reaction. VII. Conjunctival Reaction.

A 10-page, double column index concludes this book, which can rightly be considered an authority on this subject.

Laienärzte und Schulmedizin. Von Dr. Curt Wachtel in Dresden. Mit 11 Abbildungen im Text. Lex. 130 pp. 85 cents.

The book before us treats "Lay Physicians and School Medicine," or "Irregular and Regular Physicians." The chapter on History of Medicine in a condensed form occupies six pages and also refers to Schelenz "Geschichte der Pharmazie." Besides the Diagnostic Methods, Nature's Methods, an entire chapter is devoted to Drug Therapy subdivided into Homeopathy, Isopathy, Biochemical Treatment, Rademacher, Baunscheidtism and Electro-homoeopathy.

Of special interest to the historian are the many data on the history of medicine and pharmacy contained in the book.

OTTO RAUBENHEIMER, PH.M.

Illustrations of Medicinal Plants. The Inter-Ministerial Committee for Medicinal and Aromatic Plants has issued another set of color plates of medicinal plants indigenous to France. These, the fourth of the series, include belladonna, bilberry, buckthorn, yellow gentian, hawthorn, juniper, mullein and peppermint. The plates, like those of the preceding series, are excellent productions, they also have brief descriptions of the illustrated plants, information relative to their occurrence, collection, therapeutic properties, etc.

Year Book of New York Retail Druggists' Association. The annual volume issued by the Publication Committee of N. Y. R. D. A. contains a number of interesting articles by Dr. Jacob Diner, T. Bruce Furnival, M. A. Feinberg, Peter Diamond, J. Leon Lascoff, S. Kopald and others of prominence in New York pharmacy. A tribute from U. S. Senator Royal S. Copeland and a greeting from Ex-Governor Smith are included. Pincus Herz is the Chairman of the Publication Committee and the editorial work has been done by M. A. Feinberg with the assistance of Barnett Miller, W. H. Moran, and others. The volume reflects credit.

The Official Year Book and Guide, of the Italian Pharmaceutical Association of New York, has been issued by the Press Committee of the Association; the Chairman is B. Gagliano and associated with him are Domenico Crachi, Arthur Colkin, and U. J. Nicolich. Contributions from a number of men prominent in pharmacy throughout the country are included.

PROHIBITION OF THE USE OF CANNABIS INDICA IN MEXICO.

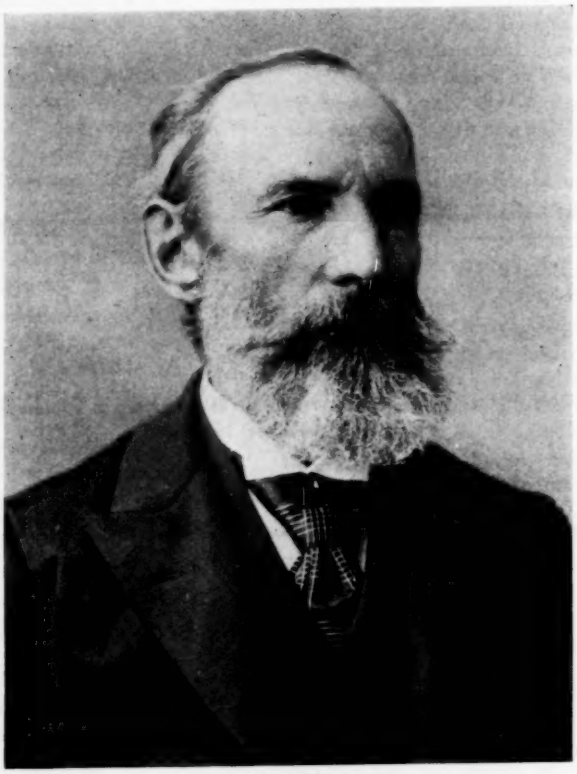
The Mexican Pharmaceutical Society has drawn the attention of the Health Department of Mexico to a situation which obtains because of the prohibition of the use of Indian Hemp. Some of the medical profession continue to prescribe and the Society asked that the Department advise the doctors that the use of Indian Hemp is prohibited. In its reply the Department pointed out that in the Materia Medica there are a number of substitutes possessing an action similar to Cannabis Indica, and asked the pharmacists to advise the doctors of substitutes that could be used and acquaint them with the benefits accruing by suppressing the therapeutic use of the prohibited drug, and that the physicians will, doubtless, be glad to coöperate with the authorities for the welfare of the nation. The pharmacists contend that it is not in their province to recommend substitutes and such action on their part would be resented by most physicians.

The Committee of the Biologic Products of the N. A. R. D. and A. PH. A. arranged a lecture, February 18th, at the Brooklyn College of Pharmacy. Dr. Geo. F. Leonard was the lecturer. Dr. Geo. E. Diekman gave his permission for the Biologic Committee to arrange a lecture on March 20th at New York College of Pharmacy, at which time Dr. C. W. Brown was the speaker.

CHARLES BULLOCK

President-Elect of A. PH. A., 1876

The AMERICAN PHARMACEUTICAL ASSOCIATION meets in Philadelphia during week of September 13, 1926



CHARLES BULLOCK.